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The Marine Observer

A quarterly journal of Maritime Meteorology

Volume XXII No. 157

July, 1952

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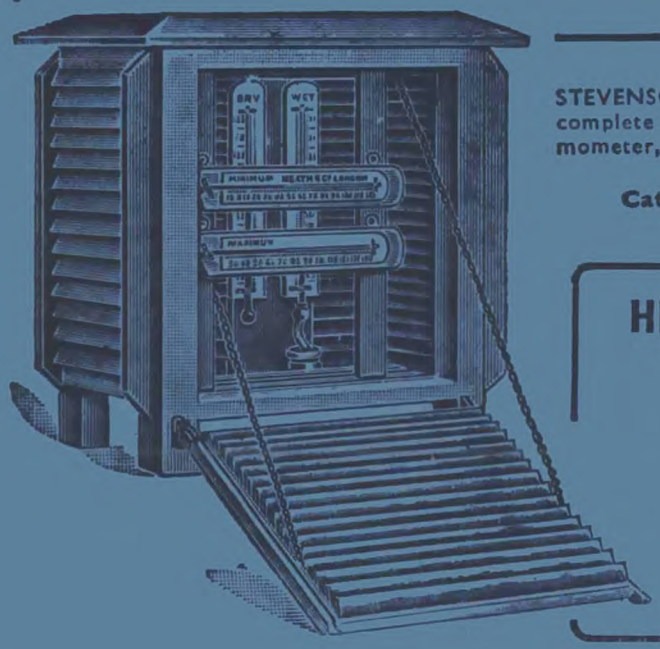

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THE MARINE OBSERVER

A QUARTERLY JOURNAL OF MARITIME METEOROLOGY PREPARED BY THE MARINE BRANCH OF THE METEOROLOGICAL OFFICE

VOL. XXII No. 157 JULY, 1952

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Letters to the editor, and books for review, should be sent to The Editor, "The Marine Observer," Meteorological Office, Headstone Drive, Harrow, Middlesex

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Editorial

After all the ballyhoo and publicity has died away, and we reflect upon the *Flying Enterprise* story, there are probably few seamen who will fail to agree with Captain Carlsen's remark, when he was presented with Lloyd's medal, " I don't know what all the fuss was about; I was only doing my job ". By that remark—in the appropriate setting of Lloyd's, whose history and existence has always been so closely associated with shipmasters—the speaker brings home to us some of the unique features of a seaman's profession. There is probably no other job in which there is need for so much personal attention and devotion to duty, and it is difficult to think how the profession of a seaman could be otherwise. The sea, as we all know, is rather a fickle mistress and the master of a ship is, to a very large extent, " wedded to his ship "; despite all the modern scientific aids placed at his disposal, he has to be constantly alert, and it is spectacular cases like the *Flying Enterprise* which bring home this fact to us.

Day or night when he is aboard his ship the shipmaster is always on duty and indeed, to varying degree, are also the heads of all departments in the ship—chief engineer, chief officer, radio officer and chief steward—but it is upon the master, as his title implies, that the chief burden of responsibility lies. The master of a ship is unique in the authority he wields; when the ship is at sea he is virtually " lord of all he surveys ", but it is equally true that his responsibilities are unique, involving as they do the lives of all hands aboard, the safety of a valuable ship and probably an even more valuable cargo. As the size and speed of ships increase and as costs continue to mount, and cargoes in their turn become more and more valuable, so the responsibilities of the master become greater. There is little wonder that Lloyd's have an interest in the personality of the masters of merchant ships and that the standard of professional examination, which is necessary before a man can call himself a master mariner, is high.

When we think about the *Flying Enterprise* case we are reminded that this is by no means the first time that serious damage has occurred to a merchant ship due to a crack developing in her hull at about her mid-length. Shortly after this incident two other American ships similarly developed cracks and broke in half off the American coast. In each case, it appears that the vessels were of welded, war-time construction. It is well known that the ships in question were war-time-built for a specific purpose, and the fact that they developed these defects is in no sense a criticism of the ship builders concerned. Quite apart from these war-time-built ships there have been quite a few other cases, notably of tankers, developing cracks and breaking in half. Casualties of this nature emphasise the necessity of the scantling rules enforced by the Classification Societies and of research being continued into the general subject of the strength of ship structures. There has, in some cases, been a tendency to look upon the Classification Societies' rules for longitudinal strength as being a bit excessive, but these casualties bring home to us the enormous stresses to which a merchant ship is subjected in various conditions of loading and ballasting when she is in a seaway.

Then there is the question of lost propellers. Almost every month we hear of some ship losing a propeller and this may involve very considerable expense, if not to the ship-owner at least to the underwriters. Loss of propellers is, of course, no new phenomenon. John Hill, in his fascinating book *Shipshape and Bristol fashion*, mentions several cases of ships in the 1880's having cracked shafts and lost propellers and rudders.

Voluntary observers in merchant ships are asked to observe, whenever practicable, the estimated height, period and direction of waves which they encounter on their voyages. Prior to 1949 observers were merely asked to describe the sea and swell in words. It is fairly obvious that descriptive terms have nothing like the value of quantitative figures. It is hoped that the statistics which are now being built up from observations sent in by voluntary observing ships will enable us to provide

naval architects and others interested in waves and wave behaviour with improved information. Wave observations made aboard the weather ships at Station "Jig" during three years show that the average wave length there in that position throughout the year is about 240 ft. and the maximum wave length recorded is about 1,600 ft. A weather ship when "on station" is, of course, in a very favourable position for obtaining accurate observations of height and period of waves because she is stationary. Such observations are obviously a good bit more difficult aboard a moving ship.

Wave statistics are not only valuable from the point of view of the naval architect and others interested in the design and operation of ships, but they have a great bearing upon air-sea rescue problems. The technique of successfully "ditching" an aircraft in a seaway needs a careful consideration of the direction, length and height of the sea and swell waves respectively. In a heavy swell, for example, the pilot may prefer to ditch along the swell waves instead of across them to avoid breaking the back of the aircraft at the moment of ditching. Although a land-based aircraft may not remain afloat long, a successful ditching may be the means of saving all those aboard the aircraft before they need get into the rubber dinghies which are supplied. There is little doubt that the more we can learn about waves generally the more effective the steps which the aircraft designer and the captain of the aircraft can take to carry out a safe ditching.

If the aircraft sinks and the survivors are in rafts, adequate information about probable or actual sea and swell waves may have quite a bearing upon the subsequent search operations. In addition to leeway, the drift of a raft, for example, may be considerably influenced by the progressive motion of swell waves as well as by the existing surface current, and, to the observer aboard a surface craft making a visual or radar search, there is no doubt about the adverse effect of waves.

Statistics both of sea waves and swell waves are also of very great interest to those who are concerned with the construction of breakwaters and harbour works generally. The destructive force of a wave is so enormous that very elaborate calculations have to be made by the engineers responsible for deciding the strength and height of a breakwater, and its orientation.

On the coasts of Portugal and North Africa, where it is customary to load and discharge ships in open roadsteads, swell waves have a particular economic significance. Another particular application of knowledge about waves is tied up with the question of microseisms. It seems that the existence of a very disturbed sea surface, including "standing waves" such as are associated with tropical depressions, causes a disturbance at the bottom of the sea which is recorded on microseismic graphs and thus indicates to an observer ashore the existence of the storm. This technique is being studied quite extensively by the U.S. Weather Bureau.

Voluntary observers at sea who make wave observations conscientiously are therefore providing information of considerable practical value.

A noteworthy instance which emphasised the effect of heavy weather upon a ship was the casualty in which the *Fred Borchard* was lost. This vessel, carrying timber from Russia, some of which was on deck, capsized in heavy weather off the Lofoten Islands. The evidence did not bring any criticism to bear upon the owners or master of the ship, but it brought out the necessity of taking every possible precaution of preventing the entry of sea water into a ship in heavy weather and emphasised that in a small vessel a few tons of water in the bilges can quickly develop into a source of great danger.

Another recent case, in which the *Solidarity* was lost in heavy weather, also off the Norwegian coast, emphasises the desirability of using locking bars or some other device to prevent hatch covers getting washed away in very heavy weather. All such cases are good illustrations of the necessity of the shipmaster being weather-minded and alive to the danger to which any ship is subject in heavy weather. There are few forces as powerful as that of the sea. MARINE SUPERINTENDENT.

WORK OF THE YEAR (ENDING 31st MARCH, 1952) OF THE MARINE BRANCH OF THE BRITISH METEOROLOGICAL OFFICE AND THE VOLUNTARY OBSERVING FLEET

1. Voluntary Observing Ships

(*a*) GENERAL

The Voluntary Observing Fleet is comprised as follows:

(i) "*Selected*" *Ships*, which make observations at standard synoptic hours. Meteorological instruments, instructions and logbooks are supplied to these ships. The observations are transmitted by wireless in the international meteorological code to various Meteorological Services for all oceans. Approximately 500 ships co-operate in this manner.

(ii) *Supplementary Ships*, which make similar observations in an abbreviated form at the main synoptic hours. These ships are supplied with a mercury barometer, air thermometers and screen. The present number of supplementary ships is about 50.

(iii) Ten *Light Vessels*, which have been recruited to provide observations of wind, visibility, weather, air and sea temperature twice daily, at 0600 and 1500 G.M.T. These observations are transmitted to shore radio stations by radio-telephony and thence by telegram to the Central Forecasting Office. Six of these vessels make and report observations of waves.
The meteorological logbooks from all these ships are sent to the Marine Branch for climatological study.

(iv) *Marid Ships*, which are coastal vessels equipped with sea thermometers and canvas buckets. There are about 75 of these vessels making observations of sea temperature in home waters twice daily and transmitting the results by R/T to the Central Forecasting Office through G.P.O. coastal radio stations.

Foreign Ships

Radio weather messages from ocean weather ships operated by other nations in the North Atlantic and from foreign selected merchant ships have also been received regularly throughout the year at the Central Forecasting Office in Dunstable.

Whalers

Arrangements were again made for selected British whaling vessels to co-operate with the Anglo-Scandinavian Expedition at Queen Maud Land in the Antarctic as they did during the previous season. Radio weather messages from these ships, in which the ship's position is given in cypher, were routed via South African radio stations. About 230 radio weather messages from five British selected whalers were handled in this manner during the 1950–51 season.

Quality of Observations

The meteorological logbooks of British Selected and Supplementary Ships are carefully scrutinised when received in the Marine Branch, and the Central Forecasting Office is encouraged to comment on the quality of the radio weather messages. Observations of doubtful accuracy are in all cases carefully investigated and steps taken to prevent a recurrence. The general standard of meteorological work in British ships, which is performed voluntarily, is high, and Port Meteorological Officers report that great interest is shown by the masters and officers in this subject. Considerable credit is due to these voluntary observers for the painstaking way in which they make and record their observations, which are of value not only to shipping but to users of meteorological information all over the world.

(*b*) NUMBER OF BRITISH OBSERVING SHIPS

Table 1 shows the number of vessels of each class monthly throughout the year.

(*c*) RADIO REPORTS

Table 2 shows the numbers of British Selected Ships, Marid Ships, foreign ships and light vessels reporting to Dunstable, and the number of messages received at the Central Forecasting Office, excluding reports received from Ocean Weather Ships.

	1951									1952		
	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Febr.	Mar.
Table 1. Number of British Observing Ships												
No. of Selected Ships on Fleet List	499	502	504	504	510	510	508	510	507	505	502	496
No. of Supplementary Ships on Fleet List	34	36	40	43	45	45	49	48	47	47	48	48
No. of Marid Ships on Fleet List	71	75	76	78	77	76	78	79	80	80	78	76
No. of Light Vessels on Fleet List	8	8	8	8	8	8	10	10	10	10	10	10
Table 2. Ships' Radio Weather Messages received at Dunstable												
1. *British Selected Ships*												
No. reporting to Dunstable	222	241	243	259	263	271	257	253	223	225	256	251
No. of messages received	2,173	2,194	2,123	2,249	2,576	2,442	2,574	2,333	2,107	2,157	2,097	2,429
No. of groups (excluding address and ship's name)	18,388	18,418	17,860	18,773	21,632	20,385	21,672	19,776	17,619	18,194	17,558	20,046
Daily average of messages	72.4	70.8	70.8	72.5	83.1	78.9	83.0	77.8	68.2	66.3	72.3	78.4
2. *Marid Ships*												
No. reporting to Dunstable	35	38	49	60	56	58	57	56	54	50	50	48
No. of messages received	247	235	285	464	374	356	318	219	282	275	281	261
Daily average of messages	8.2	7.6	9.5	15.0	12.1	11.5	11.5	9.7	9.1	8.8	9.7	8.4
3. *Foreign Ships*												
No. reporting to Dunstable	193	154	174	168	166	171	176	146	124	179	173	201
No. of messages received	599	392	412	442	448	528	565	529	621	597	623	672
No. of groups (excluding address and ship's name)	4,719	3,068	3,289	3,434	3,515	4,197	4,481	4,134	4,958	4,797	5,003	5,460
Daily average of messages	20.0	12.6	13.7	14.3	14.4	17.0	18.2	17.6	20.1	19.3	21.5	21.7
4. *Light Vessels*												
No. reporting to Dunstable	8	8	8	8	8	8	10	10	10	10	10	10
No. of messages received	460	481	442	487	494	474	549	599	601	611	579	618
Daily average of messages	15.3	15.5	14.7	15.7	16.0	15.8	17.7	20.0	19.4	20.0	19.9	20.0
Table 3. Instrumental Equipment on Loan to British Voluntary Observing Ships												
1. (*a*) Full set of M.O. Instruments	475	480	481	481	488	490	487	492	490	488	488	483
(*b*) Full set of M.O. Instruments (except barograph)	9	9	9	9	8	8	7	7	6	6	6	6
(*c*) Full set of M.O. Instruments (except barometer)	13	12	12	12	12	12	12	9	9	9	6	6
(*d*) Full set of M.O. Instruments (except barometer and barograph)	2	1	2	2	2	2	2	2	2	2	1	1
2. Number of Marid Ships with abridged sets of Instruments	71	75	76	78	77	76	78	79	80	80	78	76
3. Number of Light Vessels with sets of Instruments	8	8	8	8	8	8	10	10	10	10	10	10
4. (*a*) Supplementary Ships with full " Trawler " (Aneroid) sets	7	5	5	3	1	1	2	1	2	2	2	2
(*b*) Supplementary Ships—supplementary sets	22	28	32	40	41	42	45	45	43	42	45	45

Of the reports received by radio from Selected Ships in the eastern Atlantic, a six-monthly check showed that approximately 50 per cent were received within one hour of the time of observation and 73 per cent within two hours.

(*d*) EQUIPMENT

Table 3 shows the distribution of instrumental equipment on loan to voluntary observing ships.

2. Ocean Weather Ships

THE BRITISH OCEAN WEATHER SHIP SERVICE

During the year each of the four British Ocean Weather Ships completed four years' service as a weather ship. As during the previous year, and in accordance with the North Atlantic Ocean Weather Ship Agreement, the Netherlands Ocean Weather Ships *Cirrus* and *Cumulus* between them carried out five periods of duty during the summer at Station JIG. This permitted the lay-up of about 56 days for each British Ocean Weather Ship for survey, repairs and overhaul. This joint Anglo-Netherlands operation of Station JIG continues to be very successful and amicable and is a fine example of international co-operation.

Station JIG, in position 52° 30'N, 20° 00'W, was manned on 354 days of the period by either a British or a Netherlands Ocean Weather Ship; the station was vacated on four days due to a ship returning to Londonderry for repairs to her radar and on eight days due to fuel shortage and a serious boiler defect in another ship. Station ITEM, in position 59° 00'N, 19° 00'W, was manned on 346 days, but although technically " on station " the ship was moved to position 61° 21'N, 13° 30'W, for special operations on 63 days. Of the 20 days when the station was vacated, four were through returning to Londonderry to land a sick man, one was through shortage of fuel occasioned by heavy weather, and 15 were due to late sailing of the relief ship because one ship was temporarily laid up due to a boiler defect.

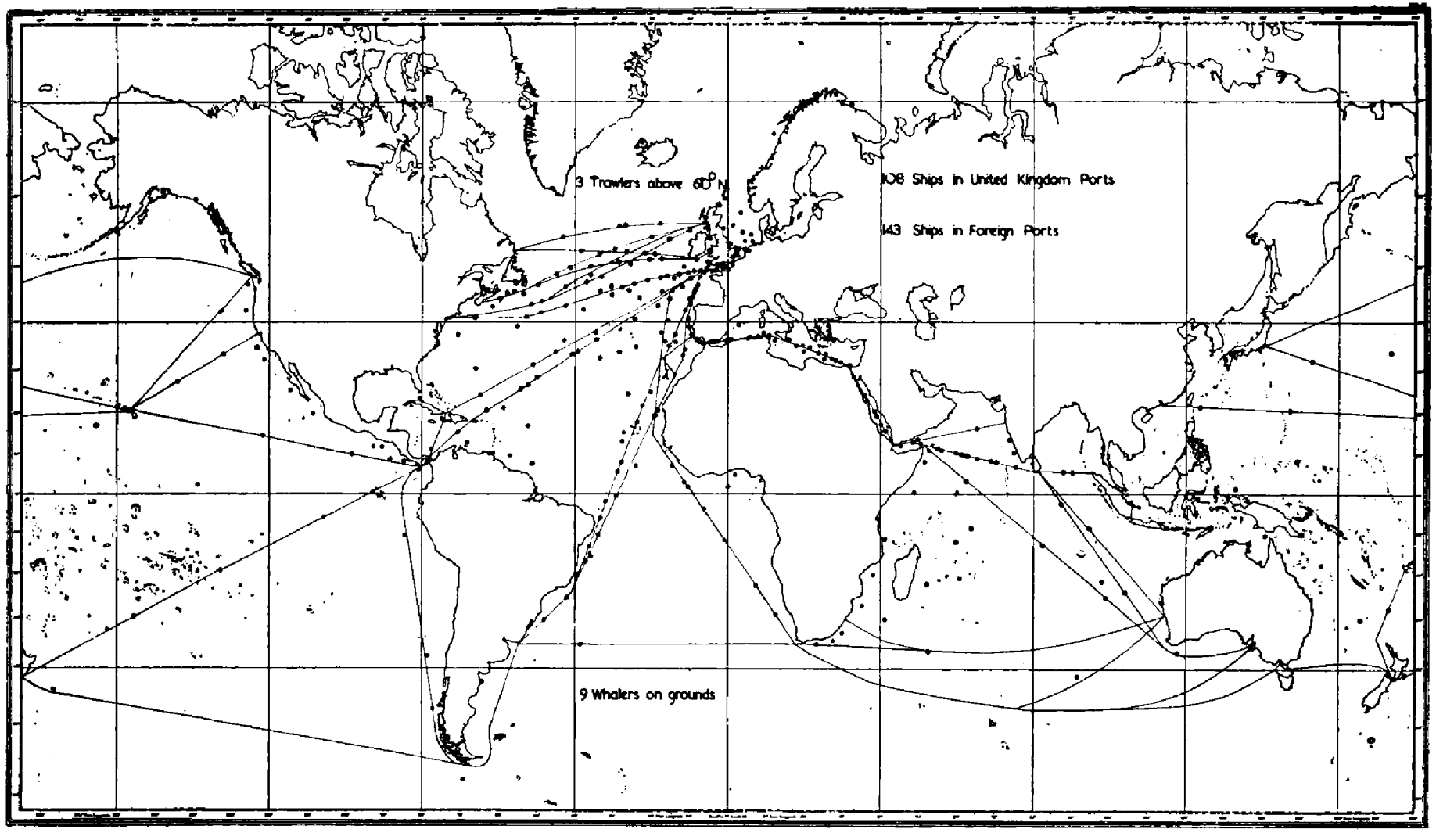
The ships carried out a full programme of meteorological work, including surface and upper-air observations, which were transmitted to the Central Forecasting Office by point-to-point radio. Air-sea rescue exercises have been carried out at frequent intervals both with British and Netherlands Weather Ships in co-operation with aircraft of Coastal Command, with the aim of keeping the ships' companies conversant with air-sea rescue organisation and drill. During these exercises mail and newspapers were invariably " dropped ", and urgently required spare parts for the radio were dropped on occasions by the aircraft.

The weather ships' navigational aids were regularly used by both civil and R.A.F. aircraft flying over the North Atlantic Ocean: 3,603 aircraft have made use of the facilities provided by the ships during the year. Whenever necessary the ships have obtained medical advice, by radio through C.F.O., Dunstable, from the Luton and Dunstable Hospital. Radio contact has been made frequently with Ocean Weather Ships of other nations.

Practical tests of two types of immersion suit were carried out under varying weather conditions; one was selected, and each ship is to be provided with three of these suits for air-sea rescue purposes. Successful tests were carried out with a marked dan buoy for measuring wave heights; each ship will in future use this apparatus. Special observations were made aboard weather ships with a balanced-bridge psychrometer to obtain the vertical gradient of temperature and humidity under varying wind conditions.

Oceanographical work was carried out for the Ministry of Agriculture and Fisheries and the Scottish Home Department, Fisheries Division. This included towing of plankton recorders, taking plankton samples by vertical hauls with 50 cm. silk nets, taking samples of sea-surface water and jettisoning of drift bottles.

Mr. D. J. Moore, of Imperial College, London, made a voyage in *Weather Observer* to make investigations on condensation nuclei over the oceans. Captain Longden and Mr. Hewitt of B.O.A.C. made a voyage in *Weather Explorer* to familiarise themselves with the work of Ocean Weather Ships in connection with



The positions of British ships which made meteorological observations on 15th January, 1952 (a day picked at random).

transatlantic aviation. Lt.-Col. H. G. Brownlow, by arrangement with the British Trust of Ornithology, and Mr. Burrows, of *Time and Life* magazine, sailed in *Weather Recorder*.

The Ocean Weather Ships seem to have experienced unusually severe gales and bad weather while on station in the North Atlantic during the winter of 1951–52, and life aboard the ships has consequently been very uncomfortable for long periods. The ships again showed their seaworthiness by sustaining only superficial damage. In the strongest gale it was extremely rare that even an upper-air observation was missed—which says much for the devotion to duty of all concerned.

Change of station names to "India" and "Juliett"

On 1st June, 1952, as a result of a change in the international phonetic alphabet which has been introduced for aviation purposes (see *The Marine Observer*, January, 1952, page 32), the names of ocean weather Stations ITEM and JIG were changed to INDIA and JULIETT. The R/T call signs have been changed to Ocean Station India and Ocean Station Juliett.

Search and Rescue

Weather Explorer was alerted on 23rd March, 1951, and from 24th to 28th March various areas were searched on request of Shannon for a missing U.S. Globemaster aircraft. On 29th the ship returned to Station JIG having covered 1,027 miles on search duties.

Minor changes have been made in the radio frequencies, etc., used by British Ocean Weather Ships, and the following radio facilities are now in operation:

(*a*) *Normal or non-emergency state*

H.F. point-to-point with Dunstable on 3005, 4380, 8705, 11525, 13365 kc/s
W/T air guard (continuous) on 3248, 6563, 8538, 12776 kc/s
V.H.F. emergency and distress on 116·1, 121·5 mc/s (as requested)
on 118·1 mc/s (continuous)
V.H.F. D.F. (on request) as specified by Area Control
M.F. Beacon at H+05, H+20, H+35, H+50 for 5 minutes { on 388 kc/s at Station INDIA / on 370 kc/s at Station JULIETT
Eureka Beacon (on request) { receive on 213 mc/s / transmit on 223 mc/s
Surface search 10 cm. radar (as required)
Maritime distress channel (continuous) on 500 kc/s
M.F. D.F. (as required)
Loran, associated with Consol, for fixing ship's position (as required)

(*b*) *Distress alert state*

As above, except that:
V.H.F. D.F. is operated continuously
M.F. Beacon is operated as required
Eureka Beacon is operated continuously
M.F. D.F. is operated continuously
R.A.F. air-sea rescue guard (continuous) on 3805, 6500 kc/s

3. Marine Climatology

(*a*) COLLECTION OF OBSERVATIONS

The numbers of meteorological logbooks received each month in the Marine Branch from Selected and Supplementary Ships were as follows:

Table 4. Meteorological Log Books received in the Marine Branch

1951									1952		
April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
51	65	65	67	95	67	67	75	84	96	80	91

Logbooks and upper-air data have been regularly received from Ocean Weather Ships at Stations ITEM and JIG. Microfilm copies of observations made at all other North Atlantic ocean weather stations and, by courtesy of the U.S.A.A.F., data from Japanese Ocean Weather Ships in the Western Pacific, have also been regularly received.

(*b*) ANALYSIS OF OBSERVATIONS

Routine work during the year has included:

(i) Observations from logbooks received from voluntary observing ships of Great Britain, Australia and Canada and from British Ocean Weather Ships and naval logbooks have been punched on Hollerith cards. The total number of observations punched was 251,000.

(ii) The Netherlands are continuing to make duplicates of British Hollerith cards containing marine meteorological data for the years 1854 to 1939 in the North Atlantic area: 1,664,000 cards were loaned to the Netherlands during the year for this purpose.

(iii) Tabulations of all observations in the southern hemisphere made by British observing ships, totalling 49,873 observations, have been supplied to the Massachusetts Institute of Technology for a special project. The U.S. Weather Bureau have stated that these observations form the largest and most extensive collection of ocean data which has been received for this project.

(iv) Duplicates of the 3,500,000 British Hollerith cards of marine meteorological data held by the Marine Branch were made by the Air Ministry on behalf of the U.S. Weather Bureau on repayment, and shipped to the United States.

4. Currents and Ice

The computation of data for the preparation of surface current charts of the North Pacific Ocean, eastward of 160°W, has been continued.

Work on the atlas of surface currents of the South Pacific Ocean, westward of long. 160°W, is approaching completion.

Assistance was given to Mr. J. M. Wordie, of Cambridge University, in preparing an international ice nomenclature for the World Meteorological Organisation.

Investigation is being made into the meteorological conditions preceding the occurrence of ice in the north-west coast of Iceland with a view to forecasting this for the benefit of trawlers operating in the area.

5. Admiralty Pilots

The sections relating to surface currents have been entirely rewritten for new editions of five Admiralty Pilots and generalised current charts have been prepared for these. Sections relating to ice in seven Pilots have also been rewritten. The revision of the meteorological sections of Pilots required during the year has been co-ordinated with the World Climatology Branch and meteorological charts have been prepared for these publications.

6. Special Work

There has been useful co-operation between the Marine Branch and the National Institute of Oceanography about various marine meteorological problems.

Papers were produced on the following subjects:

(i) Waterspouts.

(ii) Seasonal variation of the axes of low-latitude pressure and divergence patterns over the oceans.

(iii) Seasonal variations of mean pressure distribution over the world and some inferences about the general circulation.

(iv) Development of modern techniques in marine meteorology.

(v) Adaptation of mechanical tabulating and sorting machines to research in marine meteorology.

(vi) Comparison of bucket and intake methods for measuring sea-surface temperatures.
(vii) Meteorology in relation to the carriage of goods by sea.
(viii) Various short articles about marine meteorological problems.

Work proceeded on the following investigations:
(i) Vorticity of mean vector winds over the Atlantic Ocean.
(ii) Relation between mean vector surface wind and mean vector pressure gradient over the oceans.
(iii) Deviation between the directions of the wind at 50 ft. and 2,000 ft. over the oceans.
(iv) Distribution of relative humidity at sea, and of difference between saturation vapour pressure at sea-surface temperature and vapour pressure at bridge level, as a function of air-minus-sea temperature-difference and wind force.
(v) Mean seasonal resilience of the atmosphere around the British Isles, 1948–50.
(vi) A marked diurnal variation of visibility at sea.
(vii) Errors of aneroid barometers.
(viii) A proposed classification of marine bioluminescence.

7. Inquiries

Information of various types, including statistical tables and charts of marine data, was prepared for other Government departments, the Naval Weather Service and commercial firms. Much of the above was concerned with legal inquiries and investigations into shipping casualties. Other inquiries included: a request for maximum and minimum air temperatures likely to be experience along normal shipping routes, average dates during which Newfoundland ports are closed by ice, mean annual water temperatures in the River Thames, and number of days on which air temperatures over the North Atlantic fell below 32°F. during December, 1950, and January, 1951.

8. Publications

Four quarterly numbers of *The Marine Observer* were published; articles contained therein included: " Waterspouts " (A. H. Gordon); " Oceans through the ages " (C. E. P. Brooks); " Deep-sea prospecting " (M. N. Hill); " Forecasting for the D-day landings " (C. K. M. Douglas); " Comparison of intake and bucket methods for measuring sea temperature " (T. H. Kirk and A. H. Gordon).

Amendments to the seventh edition of the *Marine Observer's Handbook* were published and a revised reprint of the book sent for press.

The second edition of the *Marine Observer's Guide* was published.

The final editing of a new publication *Meteorology for Mariners* is in hand.

Work on a new atlas *Quarterly surface current charts of the Western South Pacific Ocean* is approaching completion.

The preparation of a revised edition of the atlas *Monthly meteorological charts of the Greenland and Barents Seas* is in hand.

A summary of meteorological conditions and currents at the ocean weather Stations ITEM and JIG up to 31st March, 1950, was issued.

9. International Co-operation

(*a*) WORLD METEOROLOGICAL ORGANISATION: MARITIME COMMISSION

At the first congress of the World Meteorological Organisation in Paris, Commander C. E. N. Frankcom was elected President of the Commission for Maritime Meteorology. Cdr. J. Hennessy of the Marine Branch and Instructor-Captain P. Bracelin, Director of the Naval Weather Service, are the British members of this Commission.

(*b*) INTERNATIONAL CONFERENCES

Mr. A. H. Gordon attended a Conference on Maritime Meteorology at Genoa in September, 1951, on the occasion of the 500th anniversary celebrations of the birth of Columbus. A paper entitled " The relation between the mean vector wind and the mean vector pressure gradient " was read by Mr. Gordon.

10. Awards

Each year the Director of the Meteorological Office presents " Excellent Awards " to the captains, principal observing officers and senior radio officers of British Selected Ships whose voluntary meteorological work has been considered of outstanding quality during the year. The award usually consists of a book of a scientific nature—suitably inscribed. The books selected for the purpose this year are: (*a*) *Advanced Atlas of Modern Geography*, by John Bartholomew; (*b*) *The Earth's Crust*, by L. Dudley Stamp; (*c*) *The Elements Rage*, by Frank W. Lane. Each meteorological logbook from a Selected Ship when received in the Marine Branch is very carefully scrutinised, and the quality of the work classified by a nautical officer. A maximum of 100 ships are eligible for " Excellent Awards " each year. For the year 1951–52 the award is being made to the individuals mentioned in the table on pages 116 to 118.

On behalf of Sir Nelson Johnson, our Director, we congratulate all the recipients of this award, and to those who have not received a reward this year we hope that renewed efforts will reap their reward next year. To the masters and officers of all Selected Ships we give thanks for the good work which they have done on behalf of world meteorology during the year; one reason for the high quality of their work is undoubtedly that it has been done on a voluntary basis and therefore with enthusiasm.

MARINE SUPERINTENDENT.

NEW ZEALAND METEOROLOGICAL BRANCH

The following is an extract from a letter to the Director from Dr. M. A. F. Barnett, the Director of the New Zealand Meteorological Branch.

" You may be interested to know that we recruited 141 non-Selected Ships to report in our area in 1951. Of these 90 were British. The co-operation of British ships in particular is most encouraging.

" We received a grand total of approximately 17,287 reports from ships of all categories during 1951, which constitutes a record for this Service. This was achieved despite the waterfront strike throughout New Zealand in the first half of the year, which lasted for five months, and which paralysed shipping in our area, with a consequent falling off in ship reports.

" Our Marine Section is small, and although every effort is made to keep in touch with overseas ships calling here, I am nevertheless most anxious that every British Selected Ship should know that we in New Zealand appreciate their fine contribution to our work. In this connection, I might mention that, because of the comparative sparseness of shipping in our area, we welcome retarded ship reports up to 12 hours late."

SOUTH AFRICAN WEATHER BUREAU

Excellent Awards for Ships

Dr. T. Schumann, the Director of the Weather Bureau of South Africa, has informed us that 11 British ships have been selected to receive " excellent awards " for reports rendered to the Weather Bureau during the year 1950. The award is taking the form of a framed photograph.

The names of these ships are: M.V. *Athlone Castle*, M.V. *Calabar*, M.V. *Cape Coast*, S.S. *City of Johannesburg*, M.V. *Dominion Monarch*, S.S. *Fort Stevens*, S.S. *Rogue River*, S.S. *Sarpedon*, S.S. *Southern Harvester*, S.S. *Southern Venturer*, M.V. *Winchester Castle*.

We should like to congratulate the captains and officers concerned.

EXCELLENT AWARDS (Year ended 31st March 1967)

Ship	Captain	Principal Observing Officer	Radio Officer	Owner/Manager
Afric	W. A. Murison	F. C. Watkins	M. J. Boyle	Shaw Savill Line
Amoria	D. Cooper	I. M. Brown	C. Grayson	Tanker Finance Ltd.
Apollo	G. V. Barnes	W. G. Sommerfield	R. Chamberlain*	Bristol S.N. Co. Ltd.
Benarty	C. Donnelly	J. B. W. Edgar	W. Paterson	Ben Line
Bristol City	F. R. Neil	W. A. Hursey	T. M. Jenkins, M.B.E.	Bristol City Line
British Robin	W. H. K. Hillman	J. Wallwork	P. Barrett	B.P. Tanker Co. Ltd.
British Workman	B. Sexton	C. E. Jones	S. W. Hogg	B.P. Tanker Co. Ltd.
Camellia	W. R. Hunter	W. Fallon	J. Sommervelle	Stag Line Ltd.
Cannanore	M. Champneys	M. J. F. Moulin	N. S. Smethurst	P. & O. Lines Management Ltd.
Cardiganshire	S. E. Allerton	J. A. Matthews	I. F. Stocks	Glen Line
Catford	E. Clarke, M.B.E.	J. L. Halcrow	A. Corkhill	South Eastern Gas Board
Ceramic	N. S. Milne	R. D. Mallam	R. O'Shaughnessy	Shaw Savill Line
Chindwara	J. A. MacCowan	R. J. Cox	J. Hanley	British India S.N. Co. Ltd.
City of Johannesburg	L. R. Jones	P. W. Jackson	D. Scott	Ellerman Lines
City of Pretoria	C. B. Parks Bradbury	P. G. Pike	G. Burgen	Ellerman Lines
City of Wellington	H. Lewis	C. W. Rapley	B. Holmes	Ellerman Lines
Clan Macindoe	L. Pogson	J. L. C. Cotton	N. Birnie	Clan Line
Cornwall	G. W. McCathie	M. R. Doyland	M. A. Thompson	Federal S.N. Co.
Dartwood	J. Elliott	W. F. R. Whiting	M. Lebbon	Wm. France Fenwick & Co. Ltd.
Delphic	D. T. Moulden	B. Fraser	J. F. Twomey	Shaw Savill Line
Denbighshire	C. R. B. Goodman, M.B.E.	P. J. Duff	I. Gall	Glen Line
Devon	J. H. B. Weston	C. J. Francis	D. Macauley	Federal S.N. Co. Ltd.
Devon City	M. J. Higgins	J. J. Kalnins	S. G. Whitmore	Sir William Reardon Smith & Sons
Discovery	R. H. A. Davies	J. T. Walker	E. Aquis	National Institute of Oceanography
Dukesgarth	N. Richardson	I. G. Russell	B. D. McSweeney	W. Cory & Son Ltd.
Echo	J. L. Jenkins	M. R. G. Worner	H. H. Grant*	Bristol S.N. Co. Ltd.
Esso Hampshire	L. H. Grey	G. G. Cunningham	R. Tyrer	Esso Petroleum Co. Ltd.
Explorer (F.R.S.)	E. A. Bruce, O.B.E.	A. A. Baxter	J. Steven	Dept. of Agriculture & Fisheries for Scotland
Floristan	R. L. Cain	R. W. Lorains	B. W. Webster	Strick Line
Galway	P. D. Guerrier	A. G. Williams	J. McL. Cowe	Trinder Anderson & Co. Ltd.
Glenartney	R. G. Rippon	J. C. Whittaker	H. N. Kinley	Glen Line
Glengarry	R. J. Paterson	D. P. Wallace	B. R. Epps	Glen Line
Glenmoor	R. R. Jordan	G. W. Richardson	J. Walsh	Moor Line
Glenogle	W. J. Moore, D.S.C., R.D.	J. M. Irvine	C. W. Knibb	Glen Line

Edinburgh Castle	T. W. McAllen	M. Evans	M. Liggins	Union Castle Mail S.S. Co., Ltd.
Esperance Bay	T. V. Roberts, R.D., R.N.R.	J. K. Wyles	H. H. Lyon	Shaw, Savill & Albion Co., Ltd.
Esso Plymouth	O. H. Shepheard	R. J. Sagar	D. Diver	Esso Transportation Co., Ltd.
Fylingdale	R. Coultas	T. E. Ellerby	K. Kirtley	Headlam & Son
Glenartney	C. J. Tyler	H. M. Macfarlane	J. F. Wilson	Glen Line, Ltd.
Granford	E. C. J. Morgan	J. Lord	R. Cox	Goulandris Bros., Ltd.
Haparangi	R. G. Rees	C. E. Burrill	L. Rayner	New Zealand Shipping Co., Ltd.
Herefordshire	H. Kerbyson	T. G. Hughes	A. Grimshaw Johnson	Bibby Bros. Co.
Huntingdon	L. Fulcher	T. J. Field	A. G. Wallace	Federal S.N. Co., Ltd.
Jessmore	R. E. Holland	P. H. Warne	W. Fitzpatrick	Furness Withy & Co., Ltd.
Kaikoura	N. Fraser	G. S. Gunn	L. Laval	Trinder, Anderson & Co.
Kaipara	T. R. Windus	H. O. T. Fuller	E. Carver	Trinder, Anderson & Co.
Kent	T. S. A. Moncrieff	D. E. Moran	T. G. Terrel	Federal S.N. Co., Ltd.
Kenuta	J. D. Richards	P. A. A. James	J. S. Geddes	Pacific S.N. Co.
King William	A. B. Drever	J. C. Davies	W. Ferguson	King Line, Ltd.
Lanarkshire	A. R. Cossar	A. D. Rumble	G. J. Ingram	Turnbull, Martin Co., Ltd.
Latia	J. B. Ritchie, O.B.E.	R. R. Whiteford	J. J. Brownlee	Anglo-Saxon Petroleum Co., Ltd.
Levernbank	T. S. Robertson	D. Moore	J. Simpson	Andrew Weir & Co., Ltd.
Mahseer	L. T. Owen, O.B.E.	F. D. Mitchell	R. Burton	T. & J. Brocklebank, Ltd.
Margay	E. A. Prentice	B. S. Kenn	E. Leigh	Kaye, Son & Co., Ltd.
Neaera	J. F. Macnab	J. Boadle	F. E. Coverdale	Anglo-Saxon Petroleum Co., Ltd.
New Australia	K. D. G. Fisher	J. F. Mason	W. H. Chick	Shaw, Savill & Albion Co., Ltd.
New Zealand Star	E. N. Rhodes	A. Robinson	A. B. Ewart	Blue Star Line, Ltd.
Nova Scotia	J. E. Wilson, O.B.E.	J. D. Williamson	W. C. Brock	Furness, Withy & Co., Ltd.
Novelist	T. E. Steel	G. B. Roberts	G. S. Hayes	T. & J. Harrison
Pacific Fortune	F. H. Perry	R. G. G. Bonney	I. Thomas	Furness, Withy & Co., Ltd.
Papanui	K. Barnett, R.D., R.N.R.	R. Loveridge	W. Mate	New Zealand Shipping Co., Ltd.
Paparoa	N. A. Thomas	G. Munson	A. B. Mowat	New Zealand Shipping Co., Ltd.
Perthshire	A. J. Hogg	M. P. R. Turner	F. J. C. Bray	Turnbull, Martin & Co., Ltd.
Port Alma	D. F. Morgan	W. M. G. Lloyd	F. Harrop	Port Line, Ltd.
Port Auckland	J. G. Lewis, O.B.E.	V. A. Hunt	J. S. Skinner	Port Line, Ltd.
Port Dunedin	W. B. Craig	B. Skrimshire	R. Baynes	Port Line, Ltd.
Port Hobart	L. Copeland	D. G. Mason	A. Brooke	Port Line, Ltd.
Port Macquarie	L. J. Skailes	W. V. Lusted	R. Robertson	Port Line, Ltd.
Port Pirie	F. W. Bailey, M.B.E.	W. A. Wakefield	W. Starkey	Port Line, Ltd.
Port Vindex	H. H. Smith, O.B.E.	J. R. King	F. M. Sharman	Port Line, Ltd.
Port Wellington	E. J. Syvret	J. H. Stewart	J. B. French	Port Line, Ltd.
Pretoria Castle	R. Wren, D.S.O.	D. B. Ross	H. Oliver, M.B.E.	Union Castle Mail S.S. Co., Ltd.
Rangitata	G. Kinnell, O.B.E.	A. Elliott	J. Grant	New Zealand Shipping Co., Ltd.
Rangitoto	C. R. Pilcher, O.B.E.	V. D. Hellings	E. Saunders	New Zealand Shipping Co., Ltd.
Regent Hawk	G. H. Hobson	T. M. Hemingway	R. W. Jones	Regent Petroleum Tankship Co., Ltd.
Rochester Castle	H. L. Holland	F. Pigeon	T. St. J. Coleman	Union Castle Mail S.S. Co., Ltd.

Ship	Captain	Principal Observing Officer	Senior Radio Officer	Owners
Rowallan Castle	A. E. F. Payne	E. J. C. Bennett	T. M. K. Knowles	Union Castle Mail S.S. Co., Ltd.
Ruahine	A. I. Robertson, A.D.C., R.D., R.N.R.	R. C. Kinloch	J. Heath	New Zealand Shipping Co., Ltd.
Ruysdael	J. Burns	L. Wilkinson	A. Aitchison	Bolton S.S. Co., Ltd.
Salween	S. S. Duncan	T. A. Hood	J. Brown	P. Henderson & Co.
Scholar	D. Wolstenholme	R. M. Harrison	T. Gill	T. & J. Harrison
Sherborne	H. F. McInnes, O.B.E.	W. P. Russell	P. J. Townsend	Galbraith, Pembroke & Co., Ltd.
Silversandal	G. F. Chivers	G. Lightfoot	B. Killeen	Silver Line, Ltd.
Somerset	P. S. Calcutt	C. A. Miller	P. Broome	Federal S.N. Co., Ltd.
South Africa Star	R. M. T. Jones	G. E. Marsh	J. R. Cunningham	Blue Star Line, Ltd.
Stirlingshire	E. W. Jenkin	J. Caley	N. J. Braddon	Turnbull, Martin & Co., Ltd.
Strathaird	H. S. Allan, R.D., R.N.R.	P. A. Wiseman	J. F. Clark	P. & O. Steam Navigation Co.
Suffolk	F. Pover	P. J. Field	H. Hare	Federal S.N. Co., Ltd.
Suncrest	L. J. Hunter	P. A. Kelly	M. Flynn	Crest Shipping Co., Ltd.
Sussex	F. Lougheed	D. Nicolson	F. Howarth	Federal S.N. Co., Ltd.
Sutherland	R. W. Nicolson	G. Galloway	J. F. Fitzgerald	B. J. Sutherland & Co., Ltd.
Tectus	K. J. Morris	J. Higgins	B. Richards	Anglo-Saxon Petroleum Co., Ltd.
Tongariro	C. P. Robinson	J. Bone	R. Heath	New Zealand Shipping Co., Ltd.
Trelevan	S. K. Hawken	J. Roberts	C. J. Kelly	Hain S.S. Co., Ltd.
Trelyon	F. J. Cornish	J. M. Downard	T. H. Murrin	Hain S.S. Co., Ltd.
Waiwera	L. J. Hopkins	C. H. Tucker	J. Downie	Shaw, Savill & Albion Co., Ltd.
Wendover	F. W. Grist	D. J. Cunningham	P. Wiggins	Watts, Watts & Co., Ltd.
Worcestershire	F. C. Brooks	D. C. Monteith	W. Fletcher	Bibby Bros. & Co.
Yoma	S. Thomson	J. Hamilton	W. Allan	P. Henderson & Co.

The Marine Observers' Log

The Marine Observers' Log is a quarterly record of the most unusual and significant observations made by mariners.

The observations are derived from the logbooks of marine observers and from individual manuscripts. Photographs or sketches are particularly desirable.

Responsibility for each observation rests with the contributor.

July, August and September

CURRENT RIPS

Off Corunna

S.S. *Mahia.* Captain G. Heywood. Durban to London. Observer, Mr. R. M. Munro, 3rd Officer.

23rd July, 1951, 1100 G.M.T. Well-defined current rips were observed running in a NNE–SSW direction. It was noted that the sea temperature fell from 65° to 58°F. The wind was 290° force 1 or 2.

Position of ship: 43° 32′N, 9° 12′W.

HEAVY SWELL

North Atlantic Ocean

M.V. *Gloucester.* Captain N. L. Warren. Curaçao to London. Observer, Mr. R. P. Burton, 3rd Officer.

23rd July, 1951, 0030 G.M.T. A very heavy swell suddenly arose from an ENE'ly direction, lasting for about 30 min. and causing the vessel to pitch violently. Both before and after this period the swell was moderate, confused. The wind was light, mainly N'ly, and the pressure was steady at 1023·9 mb.

Position of ship: 40° 34′N, 35° 24′W.

DISCOLOURED WATER

Arabian Sea

S.S. *Corfu.* Captain E. F. Ferraby. Bombay to Colombo. Observers, Mr. D. Johnstone and Mr. D. J. Knight.

11th September, 1951, 0845 G.M.T. The ship passed through a large area of orange-coloured water, caused apparently by plankton in suspension. The sea showed a remarkable likeness to weak tea. Streaks of discoloured scum were seen at intervals throughout the area. The wind was light and variable. Sea temp. 80°F.

Position of ship: 12° 00′N, 75° 01′E.

PHOSPHORESCENCE

North Atlantic Ocean

S.S. *Athenic*. Captain B. Forbes-Moffatt. Cape Town to Las Palmas. Observer, Mr. J. K. Mudd, 3rd Officer.

5th August, 1951, 0000–0200 G.M.T. Unusual phosphorescence in the form of broken wave tops was observed. Although the night was dark and mainly overcast, the area around appeared as though illuminated by brilliant starlight. Course 322°, speed 16 kt.

Position of ship at 0000: 4° 40′N, 12° 40′W.

Arabian Sea

T.E.S. *Theliconus*. Captain W. R. Main. Suez to Bombay. Observer, Mr. R. A. Moorhouse, Chief Officer.

13th August, 1951, 0000 G.M.T. From this time onwards until 0005 on the 13th, the vessel passed through areas of phosphorescence in which the sea appeared to be floodlit from beneath the surface. Demarcation lines between varying degrees of phosphorescence and between normal and phosphorescent areas were clearly visible for some time before the areas were actually entered. Similar conditions prevailed from 0015 until dawn on the 13th, when the glow was still visible. The sky was partly cloudy with 4/8 Cu and the sea was moderate to rough with a heavy SW'ly swell. Course 77°, speed 15 kt.

Position of ship at 2000 on the 12th: 15° 01′N, 56° 17′E.

TROPICAL REVOLVING STORMS

North Atlantic Ocean

M.V. *Ruahine*. Captain A. I. Robertson, R.D., A.D.C., R.N.R. Colon to London. Observers, the Master and Mr. R. C. Kinloch, 3rd Officer.

On leaving the Panama Canal for Curaçao on 2nd September, 1951, a special storm " Dog " was reported centred 14·6°N, 61·1°W. Further reports indicated this storm to be moving due west at 17 kt. Hurricane winds were reported within 100 miles of the north of this centre and 25 miles to the south. The storm continued on its W'ly course at 18 kt. and passed 100 miles north of the ship at 1930 on the 3rd, but by keeping close to the South American coast the ship did not come under its influence.

The barometer remained steady and the usual trade winds were experienced, although more E'ly than usual. The only indication of the passage of this storm was a long NE'ly swell experienced on rounding Cabo La Vela. The storm then weakened in intensity to pass 120 miles south of Jamaica and then curved to WNW.

Tropical Storm Warning No. 1 " Easy " was then received, estimating a storm in 16·5°N, 46°W, at 1900 on the 3rd, moving WNW at 13 kt.

The vessel left Curaçao for Southampton via Sombrero at 0200 on the 5th, when storm " Easy " was estimated at 21°N, 51°W. Upon receiving further reports indicating that " Easy " had increased to hurricane intensity, it was decided, at 1430 on the 5th, to alter course to the east, leaving the Caribbean Sea via Dominica Channel to pass astern of hurricane " Easy ". The ship entered the Atlantic at 0700 on the 6th and proceeded on the Great Circle course for the Lizard.

Meanwhile a further hurricane " Fox " was reported at 17°N, 39°W, at 2000 on the 5th, moving WNW at 13 kt. Course was maintained to pass between hurricanes " Easy " and " Fox ". The progress of these hurricanes was watched carefully and at 0800 on the 7th " Fox " was found to have curved to the NW.

The ship's course was then altered to the N and to 032° at 1530 in an attempt to cross ahead of the storm. All precautions were taken, such as striking awnings and crew swimming bath, and every preparation for heavy weather made.

A violent rain squall passed over the ship at 1630, the barometer began to fall rapidly and a long heavy swell came in from the NE. The wind freshened quickly from the NE to blow at hurricane force at 2200. Winds estimated at 100 to 150 m.p.h. were experienced in fierce squalls; the barometer fell 23 mb. in six hours and conditions deteriorated.

The ship was hove-to on various courses as the wind veered to the E and speed was adjusted to just enable the vessel to steer.

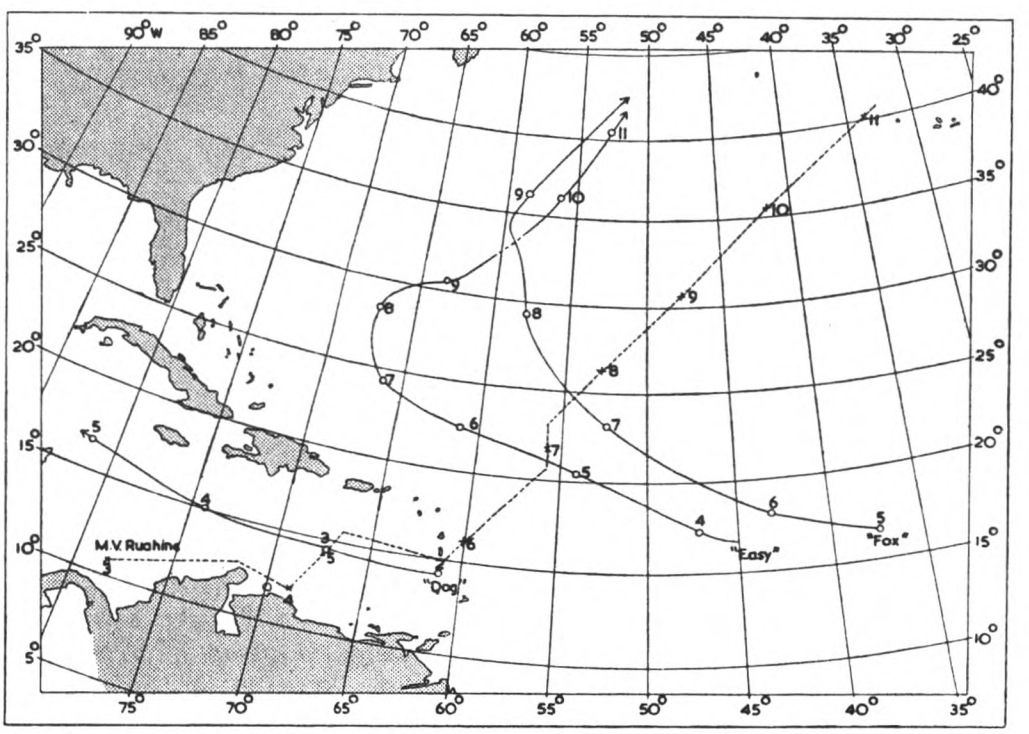


Chart showing the tracks of the three West Indian hurricanes during September, 1951, and the course of M.V. *Ruahine*. The numbers at the sides of positions indicate the date, September, 1951.

The lowest barometer reading of 977·7 mb. was recorded at 0200 on the 8th, when the wind moderated and it is assumed the centre of the hurricane was reached. The ship's course was then altered to NE to run with the wind and sea on the starboard quarter.

The barometer then began to rise sharply and the wind blew with renewed intensity from the SE, again reaching hurricane force at 0300. The barometer rose 20 mb. in the next three hours. Precipitous seas, mountainous swell and fierce squalls, during which wind force was estimated to have reached 150 to 200 m.p.h., were experienced. The wind and weather moderated by 1200 when speed was increased and course set for the Lizard.

During the whole passage of the hurricane the ship behaved excellently, both when hove-to and when running with the wind on the quarter. Owing to early preparations and efficient securing no damage was experienced by the ship. The vessel steered well and at all times was completely under control.

The diagram shows the paths taken by hurricanes " Dog ", " Easy " and " Fox ".

Note. The above observation was sent to Dr. Reichelderfer, Chief of the United States Weather Bureau, Washington, who in reply stated, " We appreciate very much your sending us the interesting extract from the meteorological log of the *Ruahine* ". He also said: " It may be of interest to your staff and to Captain Robertson to note that San Juan Weather Bureau advisory ' Number 3 Fox ' was the advisory in effect at Captain Robertson's course-setting times of 0800 and 1530 G.M.T. on 7th September. This advisory was issued at 0500 G.M.T. on the 7th and indicated a 15 to 18 m.p.h. forward motion of the storm centre during the ensuing 12 to 18 hours."

Dr. Reichelderfer also sent an account of the original observations and subsequent history of each of the storms " Dog ", " Easy " and " Fox " together with a track chart, which is similar to that drawn by M.V. *Ruahine*. In addition, he sent a note and a graph from the Canadian Selected Ship S.S. *Pinnacles*, illustrating the advantage gained in reaching the navigable semicircle. The second officer of this ship reported:—" Though the vessel did not experience winds of hurricane force and was never closer than 210 miles from the centre of storm ' Easy ', the wind dropped in force as this closest point was reached, presumably because, at the same time, the vessel reached the navigable or left-hand semicircle ".

North Pacific Ocean

S.S. *Ruysdael*. Captain J. Burns. New Zealand to Cuba. Observer, Mr. L. Wilkinson, 3rd Officer.

17th July, 1951, 1800 G.M.T. A report was received from Balboa, C.Z., giving the position of a tropical storm as 13½°N, 94°W, and the predicted movement as WNW 8 to 10 kt. The vessel was at this time directly in the reported path of the storm distant 260 miles and heading on a course of 117°. Avoiding action was taken immediately, as the vessel was flying light, the ship being put on a SSW course which was steered for a period of 12 hours. A check was kept on the reported movements of the storm and the ship was as a result steered 180° for a further six hours. At 1200 on the 18th the storm was situated 020°, 130 miles from the ship, and was still moving WNW. The ship was therefore put on a course of 120° until 1800, when a course of 107° was resumed for destination Panama.

During this time no phenomena were encountered. The diurnal range of pressure was still showing but fierce squalls of force 8 with torrential rain and some electrical disturbance were met. The wind was E'ly force 4 to 5 except in squalls. At 1800: rough sea and moderate swell. Barometer 29·89 in., steady. Overcast with occasional very heavy rain squalls. At 0400 on the 19th a further report stated that the storm had dissipated into a depression with winds not exceeding 20 kt.

TROPICAL REVOLVING STORM AND BALL LIGHTNING

North Atlantic Ocean

T.E.S. *Tectus*. Captain J. K. Morris. Curaçao to Piraeus. Observer, Mr. I. Higgins, 2nd Officer.

6th September, 1951, 1600 G.M.T. Towards the SE the sky began to assume a threatening appearance and scud at about 500 ft. was observed in this direction, travelling very rapidly at 240°. At 1650 a violent squall was seen approaching from the NE, striking the ship at 1652. The wind increased to force 9 or 10 and visibility was reduced to 250 yards. At about 1710 it became calm for some 15 seconds and then increased to force 9 or 10 again. At 1725 it steadied to 060° force 8. Between 2100 and 2400 the wind reached hurricane force from E'N to E and the air was filled with foam and spray. It was estimated that over this period the wind averaged 100 m.p.h. Men engaged in recovering damaged gear found breathing extremely difficult and progress on sheltered parts of the deck required great physical effort. The maximum wave height was estimated at 40 ft. During the early hours of the 7th the wind gradually eased, becoming 130° force 8 by 0600. About this time the horizon was illuminated by vivid ball lightning occurring at frequent intervals, the balls being comparable in size to the full moon. By 0700 the wind was steady from ESE force 7 and the sea had greatly moderated.

Position of ship at 0000 on 7th: 21° 30'N, 46° 02'W.

Note. The vessel was in the vicinity of the tropical revolving storm named " Fox ", see the observation of M.V. *Ruahine*, page 120.

ARCH SQUALL

North Atlantic Ocean

T.E.V. *Beaverlake.* Captain J. Soame. London to Three Rivers. Observers, Mr. J. Waling, 3rd Officer, and Mr. J. P. Jones, 4th Officer.

14th July, 1951, 2155 G.M.T. An elongated round formation of cloud, extending from horizon to horizon, was observed in an otherwise cloudless sky. The wind was WSW force 4. Barometer 1011·4 mb. The cloud passed overhead moving in an ESE'ly direction at about 600 ft. During transit the pressure rose sharply to 1012·8 mb. while the wind veered to W force 6. Immediately after transit the wind backed to WSW force 4 as previously. Maximum visibility was experienced during the whole period and the air temperature was constant at 53°F. Shortly after transit the formation decayed, becoming a line of cumulus clouds. A photograph of the cloud just after it had passed over the ship and just before it decayed into a line of Cu is shown as plate 1, facing page 128.

Position of ship: 52° 01'N, 53° 40'W.

WATERSPOUTS

North Atlantic Ocean

M.V. *Sherborne.* Captain H. F. McInnes, O.B.E. Swansea to Curaçao. Observer, Mr. W. P. Russell, 3rd Officer.

31st August, 1951, 1730 G.M.T. A spout was first observed as a small V protruding from the base of Cb and gradually becoming more pronounced. At 1731 the sea surface became agitated and five minutes later the column from the cloud had joined the surface and appeared very dark. By 1740 the spout was receding and the sea was becoming less agitated. At 1745 rain was observed coming from the same cloud and reaching the surface. The spout had dispersed by 1747 but the rain persisted. The spout was some three miles distant and had an estimated diameter of 50 ft. (minimum). The period of rotation, found by observation of dark patches on the spout, was about 6 sec. and the direction of rotation was anti-clockwise. The height of the cloud base was about 2,500 ft. Air temperature 81°F, sea 79°.

Position of ship: 34° 53'N, 40° 38'W.

Note. The point of special interest in this observation is the determination of the rotation period.

North Pacific Ocean

S.S. *Pacific Nomad.* Captain W. Hutchinson. Yokohama to Los Angeles. Observer, Mr. P. R. Cable, 3rd Officer.

18th August, 1951, 2033 G.M.T. A waterspout formed to the NE at a distance of about one mile and moved westwards at 10 to 15 kt. It appeared to rotate rapidly, first clockwise, then anti-clockwise, continually changing the direction of rotation. At no time did it reach cloud level. Just before it disappeared at 2039 it ceased rotating and dispersed temporarily. It finally disappeared veering WNW, leaving a cloud of spray. The cloud consisted of 7/8 Cb and Ac, the cloud base being estimated as 500 ft. Wind NE force 4, air temperature 72°F.

Position of ship: 37° 27'N, 163° 48'W.

Note. Although a waterspout may rotate in either direction, in either hemisphere, it is not physically possible for such a rotating vortex to change its direction of rotation. A change could only occur through the cessation of the waterspout and the subsequent formation of another one in the same region, which might happen to rotate in the opposite direction. It is suggested therefore that some kind of optical illusion gave the appearance of the change of direction of rotation.

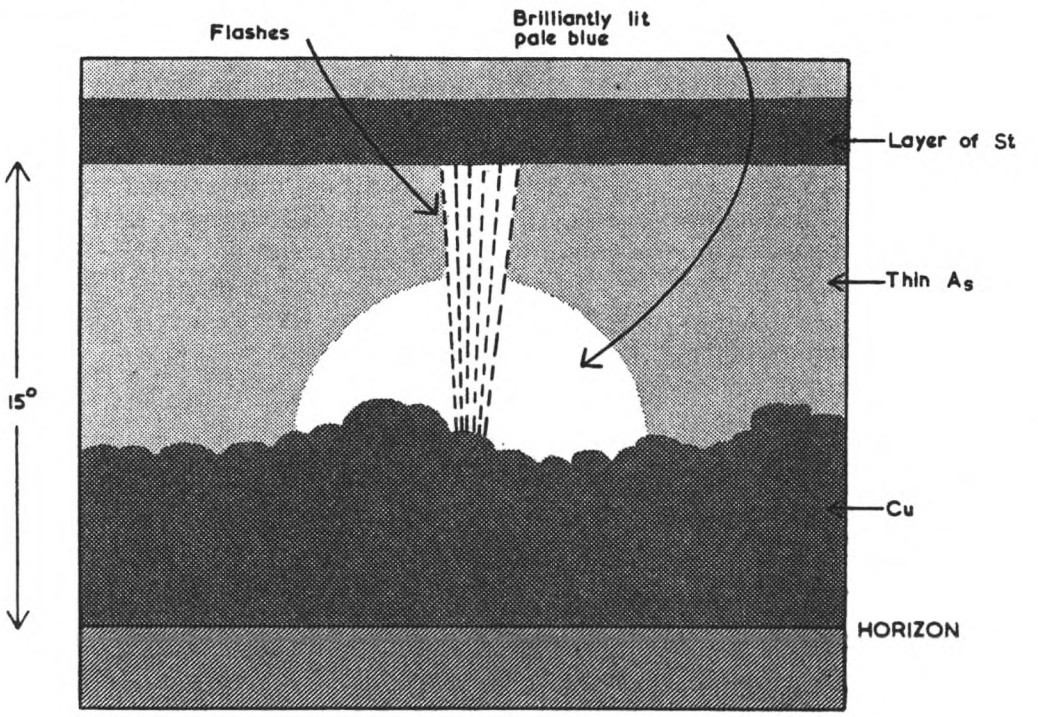
RARE FORM OF LIGHTNING

Central American Waters

M.V. *Kaipaki.* Captain N. Fraser. Brisbane to Balboa. Observers, Mr. H. McAllister, 3rd Officer, and Mr. I. S. McLean, Chief Officer.

30th July, 1951, 2013 A.T.S. Flashes of light were observed behind a mass of

Cu just above the horizon. A small sector of the sky was brilliantly illuminated and, on an average, immediately after every second flash, lines of orange-coloured flashes shot up to an altitude of 15°, terminating at a layer of St. On two occasions



these appeared to mushroom out at the top. The phenomenon persisted fairly regularly until 2040 A.T.S. The final flash occurred at 2052 A.T.S. The bearing ranged from 320° to 335°. The cloud consisted of Cu with some Ac and Cs totalling 5/8.

Position of ship: 6° 02′N, 81° 23′W.

Note. This is a very interesting observation. We know of no other observations of lightning of this character except two which have been published in the magazine *Weather* in recent years. The one which most closely resembles that of M.V. *Kaipaki* was made from a Canadian Pacific Airlines charter plane flying at a height of 13,500 ft. in the vicinity of Fiji on 16th February, 1950. A Cb cloud was illuminated by lightning flashes from within, and three or four times a burst of light like a firework display shot out from the top of the cloud. Each of these took several seconds to reach its greatest height of about 3,000 ft. above the cloud top and was not just a burst of light, but rather a series of streamers spreading out as they rose. In this respect the observation exactly resembles that of M.V. *Kaipaki* but the colour of the flashes is not stated. The other observation was made at Broome, Australia, on 7th February, 1945. Here the flashes were of a purple colour and resembled a tree with a solid " trunk " below branching in the clear air above the cloud. About six were seen and each appeared to develop and diminish gradually over a period of a half to one second.

All three observations were made in the tropics and it is possible that this form of lightning does not occur elsewhere.

CREPUSCULAR RAYS

South Pacific Ocean

M.V. *Port Wellington.* Captain E. J. Syvret. Wellington to Balboa. Observer, Mr. C. A. Rhodes, 2nd Officer.

4th September, 1951, 0002 to 0006 G.M.T. Crepuscular rays were observed bearing 098°(T). Visibility was good although patches of slight haze had been observed to the NE, SE and S. The sun was obscured by a bank of Sc, low on the western horizon. The phenomenon took the form of a fan with rays extending outwards, the base subtending on angle of about 5° and the top about 15°. The

vertical height of the " fan " was about 8°. Four separate rays extended from the southern edge and two from the northern. The coloration was dull pink merging to heliotrope at the outer edges. The cloud consisted of 7/8 Sc and Ac; Sc clouds were visible through the coloration to the horizon.

Position of ship: 3° 50′S, 92° 20′W.

Note.—Crepuscular rays are alternate bands of light and shadow, the shadows being produced by cloud projections. They are normally seen in the west near the time of sunset but sometimes continue across the sky and converge by perspective to a point on the eastern horizon opposite the sun. They may be so seen in the east when they are not bright enough to be seen overhead, as in the present observation.

EXCEPTIONAL VISIBILITY

South African Waters

S.S. *Athenic.* Captain B. Forbes-Moffatt. Fremantle to Cape Town. Observer, Mr. J. K. Mudd, 3rd Officer.

27th July, 1951, 0900 G.M.T. When coasting between Cape St. Blaize and Cape Agulhas, the mountains of the Outinequas Range, 5,000 ft. high, were visible at a maximum distance of 103 miles. Air temperature 55°F, wet bulb 52°. Wind, variable force 2, no cloud.

ABNORMAL REFRACTION

North Atlantic Ocean

T.E.S. *Theliconus.* Captain W. R. Main. Port Said to United Kingdom. Observer, Mr. P. J. E. Marshall, 3rd Officer.

18th July, 1951, 1945 G.M.T. The sun was setting, and about one minute after the sun's upper limb had disappeared below the horizon five completely circular images of the sun were seen to shoot up into the sky at about five second intervals. The sun was bearing 296°. Altostratus was piled up low on the horizon, but otherwise there was no cloud. The sea was calm and the wind light.

Position of ship: 36° 24′N, 7° 26′W.

Note. This remarkable observation is of great interest, and, as far as we know, is unique. It is obviously due to some peculiar form of abnormal refraction, but no detailed explanation can be given.

Bay of Fundy

M.V. *Rochester Castle.* Captain H. L. Holland. Observers, the Master and Mr. C. R. Kelso, 3rd Officer.

5th August, 1951, 2320 G.M.T. Thirty minutes before sunset, the low-lying coastline of Digby Neck and the coast around St. John, New Brunswick, was projected into the sky and appeared to be a continuation of the higher land in the vicinity. From afar, it appeared as if the whole coastline was engulfed in a belt of fog with the higher land showing clear. After sunset various " layers " of coast were left " hanging " in the sky as the coastline resumed its normal contours. The majority of these fragments took an elliptical form. The coastline to the N resumed its normal contours about 6 min. after sunset, but the coastline to the SSW remained distorted for some 20 min. after. The sun set bearing 294°. Air temperature 60°F, wet bulb 57°, sea 55°. The wind was light and variable.

South African Waters

S.S. *City of New York.* Captain S. L. Hoare, O.B.E. Las Palmas to Cape Town. Observers, the Master, Mr. J. L. Blanch, 2nd Officer, and Mr. J. L. Chapman, 3rd Officer.

28th August, 1951, 1400 G.M.T. Approaching Cape St. Francis, a white mist appeared to creep under the land and apparently divided it from the sea. This

occurred frequently and was continually changing in a few seconds. To seaward the horizon was broken and had the appearance of heavy breakers on a reef. This extended up to three points on the starboard bow. The " white mist " at times appeared as water flowing over the land into the sea and looked very like water flowing over a weir (plate 2). A yellow beach appeared vertically elongated and apart from the sea. White streaks shot upwards, resembling a fountain, and were presumably caused by distortion, vertically, of surf breaking on the shore (plate 3).* To westward the horizon was so distorted as to look like low-lying land. The wind was ENE force 1, with a rippled sea and moderate swell. The weather was mainly cloudy. Air temperature 74°F, wet bulb 62°, sea 63°.

Position of ship: 34° 20'S, 24° 30'E.

LUNAR RAINBOWS

North Atlantic Ocean

M.V. *British Marquis*. Captain W. C. Wall. Trinidad to United Kingdom. Observer, Mr. J. Clarke, 2nd Officer.

18th July, 1951, 0700 G.M.T. A full moon, bearing 230°, altitude 22½°, shone from dead astern, the sky being partly clouded with 3/8 Cu. With the start of a short, moderate rain shower, a faint moonbow became visible; the bow, which comprised at least two-thirds of a circle, began and ended in the water on either side of the foredeck, and appeared a ghostly white.

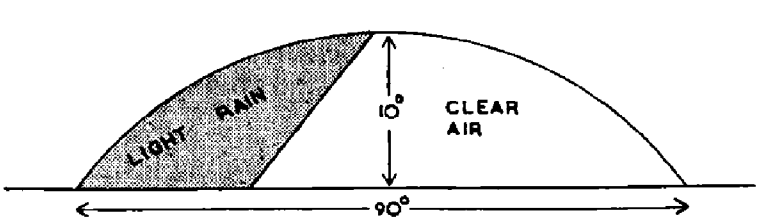
As the rain increased in density the bow developed colour and a second bow formed outside of it, also showing colour. Eventually portions of a third coloured bow were observed outside the second. The colours, which were distinct but of a watery appearance, ranged from purple, on the inside, through blue, green and daffodil yellow to a rather russet red. The bows gradually faded as the rain decreased in intensity, disappearing as they had come.

Position of ship: 15° 21'N, 56° 07'W.

Note. The secondary rainbow visible about 9° outside the primary one is not often seen when the moon is the source of light, since it is fainter than the primary bow and is not usually bright enough to be seen. The observation is thus of interest. The presence of a third bow outside the second one is of much greater interest. Supernumerary bows are formed outside the secondary bow, in contact with it, in the same way as they are formed inside, and in contact with, the primary bow. Those outside the secondary bow are, however, so faint that the inner brightest one is very rarely seen even with the sun as the source of light; it is probably impossible ever to see it in the case of the moon. On the other hand, a third bow which is not a supernumerary one is extremely rare. There are two essential pieces of information which are necessary if an unusual rainbow is to be identified with certainty: (*a*) its angular position relative to the primary or secondary bow; (*b*) the order of the colours in each bow separately, i.e. whether red is on the inside or on the outside. Unfortunately neither of these has been given in the present instance.

S.S. *Manchester Commerce*. Captain W. Hine. Montreal to Manchester. Observer, Mr. F. Jones, 2nd Officer.

15th September, 1951, 0225 G.M.T. A lunar rainbow was observed to the N, the base of which subtended 90° and the height 10°. The part of the bow which



was in the light rain shower appeared white, while the part in clear air showed the colours of the spectrum. The colours soon disappeared but the white bow was

* Plates 2 and 3 are facing page 128.

visible for some 3 to 5 min. The moon was almost full and nearly at its zenith. Air temperature 49°F, wet bulb 48°, sea 52°.

Position of ship: 56° 09′N, 28° 45′W.

Note. This is an interesting observation, as although a solar rainbow, or part of one, is not infrequently seen in what appears to be clear air, it is unusual in the case of the moon, on account of the much smaller amount of light in the bow. There must, of course, be some rain falling in what appears to be clear sky.

SOLAR HALO

China Sea

S.S. *Corfu.* Captain E. F. Ferraby. Singapore to Hong Kong. Observers, Mr. D. Johnstone, Senior 2nd Officer, Mr. D. J. Knight, 3rd Officer, and Mr. J. B. Newman, 4th Officer.

1st July, 1951, 0130 G.M.T. With the sun at an altitude of 50°, a halo of radius 20° and width 1° was observed. The colours red, orange, yellow, green, blue, indigo and violet were bright and clear. The halo slowly faded and decreased in radius to about 14° until at 0200 it disappeared. At the end, the spectrum showed red, orange and yellow fairly distinctly, the other colours merging to form a bluish-white hue.

Position of ship: 17° 11′N, 113° 39′E.

Note. It is unusual for the colours in a halo to be so bright and clear, particularly those at the blue end of the spectrum. The observation that the radius of the halo decreased to 14° before disappearing is of very great interest. Such changes, or any form of movement of a halo phenomena, have only been recorded once or twice and cannot be explained at present by optical theory.

RARE LUNAR HALO

Australian Waters

M.V. *Dominion Monarch.* Captain Sir H. R. Gordon, K.B., D.S.C. Auckland to Sydney. Observer, Mr. H. Riding, 3rd Officer.

15th July, 1951, 1000 G.M.T. A clearly defined halo of 33½° radius was visible for 15 minutes before being obscured by large cumulus. The cloud formation was constantly changing but at the time of observation was ⅛ Cu, 6/8 Ac, As and Cs.

Position of ship: 34° 12′S, 164° 10′E.

Note. In the April, 1952, number of *The Marine Observer* an observation of a rare lunar halo of radius 16° 14′, made by M.V. *Condesa,* was published. A note was appended to that observation, giving the radii of rare halos, amongst which is the halo of (theoretical) radius 32°. This is undoubtedly the one observed by M.V. *Dominion Monarch.* It was pointed out in the note referred to above that some of these halos appear to vary slightly in radius on different occasions. Also it is difficult to measure the radius exactly since even the inner edge of a halo, which is always better defined than the outer one, is not really sharp.

These two observations are valuable since the two halos concerned have been seen only a very few times and additional confirmation of the existence of such rare phenomena is always desirable.

Part of a lunar halo of 32°, observed as being about 10° outside the ordinary halo of 22°, which was also visible, was seen by S.S. *Maimoa* on 21st January, 1930, in the South Pacific Ocean. This observation was published in *The Marine Observer,* Volume VIII, No. 85, January, 1931, page 6.

GREEN FLASH

North Atlantic Ocean

S.S. *Assyria.* Captain F. G. Watts, R.D., R.N.R. Montreal to Liverpool. Observers, Mr. M. Forster, Chief Officer, and Mr. H. Dormer, 4th Officer.

10th July, 1951, 0511 G.M.T. A brilliant green flash, lasting for some two seconds, was observed at sunrise. In contrast to the green tinting of the sun's upper limb which is frequently observed, on this occasion it was completely obscured

by a vivid green light, distinctly round in shape, as if from a green-shaded searchlight. The wind was SE force 3 and the sea was slight. The cloud consisted of 7/8 Sc with a ridge of clear sky to the east. Air temperature 52°F, sea 53°.

Position of ship: 56° 14'N, 26° 30'W.

SKY COLORATION

South Pacific Ocean

M.V. *Armadale.* Captain E. J. Ridout. Cairns to Balboa. Observer, Mr. G. C. Elvidge, 2nd Officer.

15th September, 1951. Shortly after sunset an area of purple hue appeared in the western sky between 30° and 50° altitude. As fair weather Cu drifted across, their colour changed to a distinct green, making a most unusual spectacle.

Position of ship: 14° 10'S, 160° 50'W.

Note. The purple hue is a phenomenon of twilight known as the First Purple Light, which covers a considerable part of the western sky after sunset. It reaches its greatest brightness when the sun is about 4° below the horizon and disappears when it is about 6° below. It is not often seen conspicuously since its appearance depends on a combination of atmospheric conditions. At a later stage of twilight a similar phenomenon may appear, known as the Second Purple Light, but this is fainter and less easy to see. These and other phenomena of coloration of the clear sky after sunset are most in evidence in arid or semi-arid land regions.

AURORA

North Atlantic Ocean

M.V. *Port Dunedin.* Captain W. B. Craig. Avonmouth to Canada. Observer, Mr. B. B. Skrimshire, 3rd Officer.

28th July, 1951, 0515 G.M.T. Aurora was observed as a pale twilight in the N, increasing in brilliance until 0200 when pale "curtains" could be seen with brilliant shafts of light moving rapidly along them. The display was pale green in colour with the brightest stars still just visible. It faded and finally dispersed at 0240. The sky was cloudless and visibility was very good.

Position of ship: 46½°N, 54½°W.

S.S. *Matheran.* Captain H. E. MacGregor. New York to London. Observer, Mr. P. D. Griffiths.

23rd August, 1951, 2250 to 2300 G.M.T. Aurora was observed in the form of a faint white loom stretching from N to NNW along the horizon with occasional shafts of brighter intensity moving across the loom from E to W and extending to an altitude of about 20°. The cloud consisted of ⅛ St on the northern horizon.

Position of ship: 47° 10'N, 32° 57'W.

M.V. *Deerpool.* Captain C. H. Churchill. Mobile to London. Observer, Mr. R. A. Vans, 3rd Officer.

25th September, 1951, 0015 G.M.T. Aurora was observed bearing 320° to 350°. The arc extended to about 20° above the horizon. Parallel rays of varying length and intensity reached almost to the zenith and appeared to move from N to W. The display lasted for 15 min., the sky being slightly clouded.

Position of ship: 35° 19'N, 61° 06'W.

Indian Ocean

S.S. *Papanui.* Captain K. Barnett, R.D., R.N.R. Dakar to Fremantle. Observer, Mr. R. Loveridge, 3rd Officer.

25th September, 1951, 1900 G.M.T. Aurora was observed in the form of a fairly bright, curved searchlight beam which curved upwards from a point source due S towards the zenith. Beyond the zenith it curved NE'wards with gradually diminishing brightness. The display remained steady in form and brilliance for roughly two hours and was then obscured by cloud.

Position of ship: 39° 24'S, 30° 26'E.

Photo by J. Waling

Plate 1

Arch squall photographed from T.E.V. *Beaverlake*, 14th July, 1951, at 52° 01′N, 53° 40′W (see report on page 123).

Plate 2

Plate 3

Abnormal refraction seen from S.S. *City of New York* on 28th August, 1951, when approaching Cape St. Francis (see report on page 125).

To face page 129

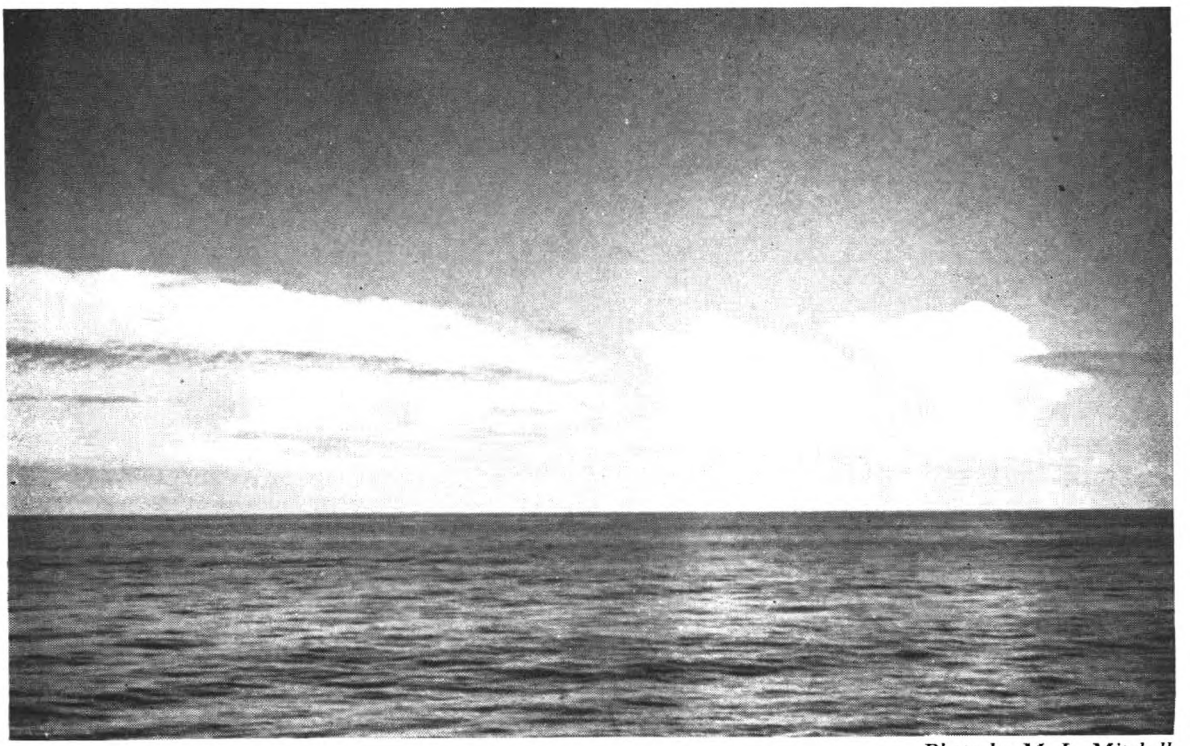


Photo by M. L. Mitchell

Plate 4

Cu and Sc clouds observed from S.S. *Eros*, 22nd September, 1949, 1400 G.M.T., at position 30° 18′N, 45° 55′W, while on passage from London to Jamaica.

Photo by I. H. Stewart

Plate 5

This excellent example of cloud photography was taken in 1951 by Mr. I. H. Stewart, 3rd Officer, M.V. *Port Wellington*, using a yellow filter over the lens. Unfortunately the date and the position of the ship is not stated. The photograph appears to show large Cu and Fc with Ac and As above.

METEORS

North Atlantic Ocean

S.S. *Tweed.* Captain C. C. Dingle. St. Vincent to Pernambuco. Observer, Mr. L. L. Hunter, 2nd Officer.

27th September, 1951, 0445 G.M.T. A meteor of magnitude −3·0 travelled from a position near Canopus in a SE'ly direction. It illuminated a large area of cloudless sky with a dazzling blue-green colour. The trail, which was equally brilliant, was roughly 5° in length and emitted showers of sparks. An instant before disappearing the meteor flared up to a greater magnitude for about ¼ sec. The time of flight was 4 sec.

Position of ship: 6° 56'N, 28° 52'W.

South Pacific Ocean

T.S.M.V. *Silversandal.* Captain G. F. Chivers. Brisbane to Panama. Observer, Mr. A. M. Kirkby, Junior 2nd Officer.

1st September, 1951, 1500 G.M.T. A brilliant meteor with a silver-blue head and a ragged flame-coloured trail was observed for about 3 sec. in the SE quadrant. It appeared at an altitude of 40° and finished at 30°. At the time a considerable area of the sky ahead and above the vessel was illuminated with a blue light. The figures of a wrist watch were plainly visible.

Position of ship: 30° 21'S, 168° 46'E.

Indian Ocean

M.V. *Levernbank.* Captain T. S. Robertson. Colombo to Chittagong. Observer, Mr. F. G. Howard, Chief Officer.

13th August, 1951, 2300 G.M.T. Within one minute, five small meteors flashed across the sky. Four of them were of little significance, being visible for one second or less and travelling 320°, 270°, 120° and 030° respectively. The fifth, of a magnitude about −1·6, travelled due S. It had a whitish appearance and lasted for two seconds, leaving a trail. All five seemed to radiate from ∝ Persei (Mirfak), altitude 47°.

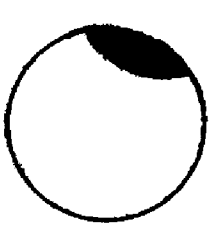
Position of ship: 8° 48'N, 83° 32'E.

Note. These meteors were members of the annual shower known as the Perseids, the greatest number of which appear on the nights of the 11th to 13th of August.

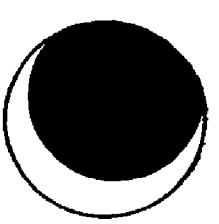
ANNULAR ECLIPSE

North Atlantic Ocean

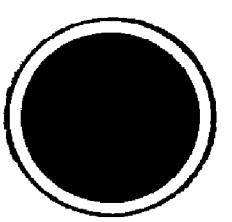
M.V. *Nottingham.* Captain H. Hill, D.S.C., R.D., R.N.R. Curaçao to London. Observers, the Master and deck officers.



1003 G.M.T.



1057 G.M.T.



1121 G.M.T.

1st September, 1951, 1003 G.M.T. The eclipse was noticed after first contact had been made. It was watched from then on, with considerable interest, as closely as cloud conditions would permit. As the eclipse advanced, the light gradually

decreased until it gave the appearance of a typically dull, overcast winter's day. The cloud consisted of 4/8 Cb, Ns and 8/8 As, Cs. At 1119 the crescent of the sun was completed and became a full circle which lasted for nearly 3 min. About 95 per cent of the sun was obscured at the full eclipse. Further observation was impossible owing to the cloud thickening and precipitation beginning. Solar sights were taken whilst the eclipse was taking place and no appreciable inaccuracies were observed.

Position of ship: 36° 21′N, 42° 23′W.

Note. The distances of both the sun and moon from the earth vary to some extent during the year, and when the body of the moon is superimposed centrally on the sun's disc one of two forms of eclipse may occur. If the apparent size of the moon is relatively large compared to that of the sun the latter is completely hidden and a total eclipse of the sun occurs. On the other hand, when the apparent size of the moon is relatively small a ring of the sun's limb shows equally all round the moon at the instant the centres of the two bodies coincide. Both total and annular eclipses of the sun can only be seen from within a narrow belt of the earth's surface. This belt is about 100 miles wide but may be somewhat more or less, according to the circumstances of the individual eclipse. This belt moves over the earth's surface so that the eclipse can be seen at different times over an extensive difference of longitude. M.V. *Nottingham* was within the belt at the right time and therefore observed the annular eclipse. At points outside the belt an ordinary partial eclipse of the sun is observed, more of the sun being covered at its maximum phase the nearer the observer is to the central belt.

Three observations of this eclipse as a partial one have been received from the following vessels: M.V. *Auricula*, in 3° 04′S, 6° 16′W; M.V. *Pilcomayo*, in 5° 21′N, 27° 20′W; and M.V. *Waiwera*, in 21° 28′N, 60° 43′W.

Excellent Awards

By Lt.-Cdr. L. B. PHILPOTT, D.S.C., R.D., R.N.R.
(Nautical Officer, Marine Branch, Meteorological Office)

A shipmaster with considerable experience of voluntary observing at sea who recently visited the Marine Branch told us that his junior officers were impressed by the fact that *The Marine Observer* contains many reports of phenomena, and that they thought great " weight " was attached to these reports in assessing logbooks for excellent awards. It was their impression that it was only necessary to fill the " additional remarks " pages of the logbook with a few flowery phrases, a coloured illustration or two and an " Excellent Award " from the Meteorological Office would follow as a matter of course. The captain had done his best to discountenance such an idea among his own officers and it is the aim of this article to shoot it down altogether, as well as to assure all officers that none of their voluntary work on behalf of this Office is lost sight of.

Each logbook received here is very carefully scrutinised by a nautical officer and assessed according to the quality of the observations. On 31st March, i.e. at the end of the financial year, the 100 logbooks which have received the best " assessment " during the previous 12 months are picked out and awards given to the captain, principal observing officer and radio officer whose names appear in the front of the logbook. Where two or more officers are so named the award goes to the one who has been in the ship for the longest period of observations. It will thus be seen that it is very important to enter in the logbook all dates of the changes of officers. No officer may receive more than one award in any one year, but if an officer sends in two excellent logbooks from different ships the award goes to the officer who is named as the next junior to him in the second ship.

Until 1939 the awards took the form of bound volumes of *The Marine Observer*, but since the war, books on various technical and scientific subjects connected with the sea have been given. Among the titles selected have been *The World of Science*, *Wonders of Neptune's Kingdom*, *The Seas*, *The Life of Captain Cook* and the *University Atlas*.

The officer who assesses the quality of the observations in a ship's meteorological logbook at the Marine Branch bases his decisions upon his own experience as a seaman and voluntary observer and his training in the Meteorological Office, supported by the advice on day-to-day problems which he receives from the Port Meteorological Officers who are, of course, in actual touch with the observers themselves. In addition to the accuracy, neatness and legibility of the observations he must decide the degree of reliability which can be placed on them and, above all, the amount of effort which has gone into the making of them, bearing in mind the opportunities which the observer has had.

The record of instrumental observations does not normally give much scope for assessing one ship's logbook as better than another, for provided they are made carefully and accurately every officer should be able to deal with these observations without difficulty. Credit is given for the amount of care and attention which is shown to have been given to them; the accuracy of the barometer correction, the degree of precision to which temperatures have been read, evidence as to whether the Stevenson screen has been conscientiously placed to windward before taking an observation and the accurate computing of dew point. Notice would also be taken as to whether the sea temperature had been taken from the condenser intake in circumstances when a bucket could have been used, and if a proper note is made about the method used for making this observation. It is possible that barometer errors may have been suspected and reported by the Central Forecast Office, as a result of a radio weather message from the ship concerned, and the scrutiny of the logbook will often reveal the cause of such an error.

The first major differences between individual logbooks come when the later columns of the book are read. Some ships, for instance, give a very full and complete Beaufort notation, others enter up only the minimum of Beaufort letters and, whilst cloud observations themselves are not easily checked, a discrepancy between them and the Beaufort notation will soon show the assessing officer whether he is dealing with a careful and painstaking observer or not.

Whilst wave observations can be made by most ships, it is quite understood that in some circumstances these are impracticable, i.e. by virtue of the size of the ship herself or the height of her side, perhaps it is too dark or the visibility too short; but the " excellent " log must show the observer willing to make the observation, e.g. in many cases the direction alone could be recorded even if it is not possible to determine the period and height. All of these factors are taken into consideration when assessing these columns.

The column for " remarks ", once referred to in these pages as the Cinderella of all the columns, is one which has a great bearing on the classification of a logbook. Circumstances may prevent instrumental observations being made accurately, cloud heights recorded, etc., but it is always assumed that an officer deserving an excellent award will notice when the wind shifts, when the sea gets up, when the rain comes on and the many happenings which are incidental to a ship's passage over the oceans. The entries in the " remarks " column can safely be taken as a measure of the amount of care which has been taken over the observations as a whole.

It is a fundamental requirement of an excellent logbook that it shall either contain observations of surface currents or show some adequate reason why these are omitted. Sometimes such a reason has actually been entered in the log, e.g. the impossibility of getting good sights or the erratic behaviour of the standard compass, but in any case the " current " pages are compared with the body of the log so that due allowance may be made for their not being filled in. No ship trading across the North Atlantic, for instance, is penalised for not having sent in current observations unless her log shows her to have had a reasonably smooth passage with clear skies enabling good sights to be obtained. On the other hand, ships which habitually sail through " flying fish " weather are expected to provide current data before they can come anywhere near an excellent award. More credit is given for

currents over short periods, e.g. between " stars ", than for noon to noon currents, though here again the assessing officer, remembering the cloud cover which so often used to appear at star time and disappear five minutes later, is careful not to expect a star position every day. Where current data have been deduced from an astronomical fix in full daylight or at night by the light of the full moon, that shows the observing officer to be really keen.

As regards " the additional remarks ", the discussion of which gave rise to this article, these may be considered as incidental to the body of the log and, while credit is given where credit is due, no undue weight is attached to them. A ship engaged in a somewhat prosaic trade may make voyage after voyage without coming across anything worthy of note and many an excellent award in the past has gone to a ship whose " additional remarks " pages have been blank. On the other hand, not every ship who enters observations in these pages will find herself in the " excellent " category, for many observations, at first sight most pleasing to the eye, have failed because of insufficient data to support them. In order that nothing of scientific importance shall be passed over we have often asked for an amplifying report, but the assessment stands on the way the observation was first entered.

One of the most important functions of an observing ship, and one which is mentioned in the International Convention for the Safety of Life at Sea, is the transmission of the radio weather message. No ship can qualify for an excellent award unless she has done this regularly and conscientiously, and the wireless log is scrutinised equally with the synoptic record. When the synoptic hour falls outside his watch-keeping period we do not expect the radio officer to turn out in his watch below to send the message, though we give him credit if he does so. In assessing a logbook it is well appreciated that there are many occasions when it is impracticable to observe at all four synoptic hours, e.g. in poor visibility, whilst in traffic or making a landfall, but the mere fact of the radio officer being off watch or the ship being out of radio touch with a coast station is not considered an adequate reason for the deck officer to miss making an observation. Accuracy, reliability, legibility and thoroughness are thus the essentials of an excellent logbook.

Officers who are afraid that their award will be given to their relief, or otherwise miscarry if they leave the ship in the meantime, may like to know the method of distribution of these awards. No award ever leaves this office until we obtain from the officer himself, or in unhappy circumstances from his next of kin, the address to which it should be sent. Getting this information is sometimes a lengthy business, but we wait two years after the first notification has gone out before we give up hope of tracing the officer. If any awards are unclaimed after that time they form part of the stock of awards for the following year. For instance, the awards given in 1951 included 10 unclaimed from the 1948 awards. The awards are sent by registered post to the officer by name, at the address he has given us and a presentation label is affixed inside the cover of the book. As an instance of the efforts which are made to trace officers, a recent case may be interesting. The radio officer in question (radio officers seem to be particularly difficult to trace) was sent a letter informing him of the award and asking him to furnish an address to which it could be sent. No reply was received, so at the end of two months we got his home address from the owners of the ship. Again receiving no reply to the letter we sent to that address, and thinking that perhaps the officer had moved his home since leaving that particular ship, we asked the Marconi Company for his address. They gave us the same address as the shipowners had done so we wrote a third letter. Again no reply was received, so we sent a copy of our original letter to the Registrar-General with the request that it be forwarded to the officer if he could be traced. At last we heard from the officer himself, and 11 months after our first letter had gone out the award was sent to him.

It is, of course, possible that an officer may observe for many years and yet never receive an award, even though during this time he may have contributed to many excellent logbooks. The notation EX will, however, appear on the personal card,

which is kept in the Marine Branch for every observing officer, and will stand to his credit when his record over many years is assessed, but no annual award will come his way unless he is named in the logbook itself as either the captain, principal observing officer or radio officer. The writer of this article, for instance, was for some 10 continuous years before the war a member of the corps of voluntary marine observers and contributed to five " excellent" logbooks in that time, but was never the recipient of an excellent award. To those officers who have for years been observing apparently without reward, perhaps we cannot do better than quote from St. Paul's Epistle to the Corinthians: " Know ye not that they which run in a race run all, but one receiveth the prize. So run that ye may obtain."

TO THE DECIMAL POINT

We make no apology for quoting from the remarks column of a recently received logbook of a Selected Ship (on passage from Cape Town to Tenerife):

" Having decided we do not come under Lt.-Cdr. Philpott's description of luckless observing officers on passage round Cape Horn (*The Marine Observer*, October, 1951), temperatures are now taken more accurately."

Will other ships please note.

Presentation of Barograph to Captain Eckford

On 14th February, 1952, the Marine Superintendent of the Meteorological Office presented, on behalf of the Director, an inscribed barograph to Captain R. D. Eckford of the Pacific Steam Navigation Company, aboard the S.S. *Cuzco* in Canada Dock, Liverpool. As was reported in the October, 1951, number of *The Marine Observer*, Captain Eckford has been a voluntary observer since 1924, and the presentation was made in view of his consistently good voluntary work on behalf of the Meteorological Office ever since that date. The occasion was marked by a luncheon party at which Mr. D. C. Davies, Assistant Manager of the Pacific Steam Navigation Company, Captain W. M. Horsfall, Marine Superintendent, Captain J. A. Mackay, Chief Assistant Harbour Master, and Captain D. W. Hutchinson of the S.S. *Salamanca* were present, as well as Commander M. Cresswell, Port Meteorological Officer.

Commander Frankcom, in making the presentation, conveyed Sir Nelson Johnson's regret that he was not able to be present personally, and thanked Captain Eckford and the Pacific Steam Navigation Company, on the Director's behalf, for the fine work which they have done over so many years, for Meteorological Services not only of this country but of the world. The ships of this Company, trading as they do to the Pacific, traverse waters which are relatively unfrequented, and their observations are therefore of very great value.

Captain Eckford in accepting the barograph, said how honoured he was at receiving it, but stressed the fact that much of the work was done by his officers. Mr. Davies congratulated Captain Eckford on the award, and said how pleased he was that ships of the Pacific Steam Navigation Company were able to contribute in this practical way to the furtherance of knowledge about meteorology of the oceans.

MARINE SUPERINTENDENT.

Loss of the *Flying Enterprise*

By P. R. BROWN, M.Sc., A.R.C.S., D.I.C.
(Marine Branch, Meteorological Office)

That weather plays a vital and often predominant part in many shipping casualties each year is well known, but it may come as a surprise to many that in three formal investigations held during the four months ending January, 1951, into the losses of British ships alone, weather conditions were of such importance as to necessitate the attendance of a representative of the Marine Branch of the Meteorological Office to give evidence. In all three cases lives were lost. The loss of the S.S. *Flying Enterprise* obtained more publicity than is usual for the loss of a ship, this being due primarily to the great heroism of Captain Carlsen. The reports on the meteorological conditions, supplied by the Marine Branch to the United States authorities, raised aspects which should be of interest to all mariners.

The *Flying Enterprise*, a welded ship of 6,711 tons gross, was partially loaded with a mixed cargo including pig iron and *objets d'art*. She left Hamburg on 21st December, 1951, for New York, and passed Dover on 23rd. On 24th December the vessel, during her passage westwards through the English Channel, encountered SW'ly winds of Beaufort force 6 to 8, which were due to a slowly moving, extensive depression centred in the Iceland area. As the ship steamed westwards south of Ireland on Christmas Day the winds were less strong. A deep depression centred at 48½°N, 36°W, at midnight on 25th, with a central pressure of 981 mb., moved about ENE'wards during 26th, and deepened rapidly until the late evening, when it started to occlude. Behind this depression was a supply of very cold air from the Arctic, which became extremely unstable when it reached middle latitudes (see Figs. 2 and 3), giving frequent showers, which were often heavy and sometimes accompanied by hail and thunder. At midnight on 26th this depression was centred at 54½°N, 15½°W, and had a central pressure of 943 mb. The Ocean Weather Ship *Weather Observer* was at about 52° 27′N, 20° 10′W, at 1940 G.M.T. on 26th and was then close to the centre of the depression. The minimum pressure was recorded by *Weather Observer* at this time and was 938·4 mb. (see article "Weather experienced by the *Weather Observer* on 26–27th December, 1951 ", page 145). The *Flying Enterprise* experienced strengthening winds on the morning of 26th, and after the passage of a warm front over the ship at about 1500 G.M.T., the wind became SW or WSW force 8 to 10. At the passage of a cold front at about 1800 G.M.T. the wind veered to WSW and became force 10, possibly reaching force 11 at times. The following extract from the decode of two reports received from the *Flying Enterprise* are of interest, since these were the last two weather messages sent out by the vessel:

26th December, 1951. 1200 G.M.T. Position 49·9°N, 13·5°W. Wind 220°, 35 kt.
26th December, 1951. 1800 G.M.T. Position 49·9°N, 15°W. Wind 230°, 55 kt.
Present weather: intermittent moderate rain. Past weather: showers.

On 27th, the day on which the vessel developed a crack in her hull, the wind experienced by the *Flying Enterprise*, as she continued to steam westwards (see Fig. 1), was W to NW force 8 to 10, probably reaching force 11 at times. The depression mentioned above continued to move ENE'wards, being centred over central Scotland at midnight on 27th. It filled up quite rapidly after about noon on 27th and the central pressure was 965 mb. at midnight.

The vessel reported the crack as being forward of the bridge, running from the after corner of No. 3 hatch, across the deck and down through the sheerstrake on the port side. On the starboard side the crack ran from the deckhouse, out to the side and down through the sheerstrake. The cracks were filled with a cement patch and apparently caused no further trouble.

On 28th the *Flying Enterprise* reported that she had lost power and listed 30°, and she requested towage assistance. On this day another depression, centred at

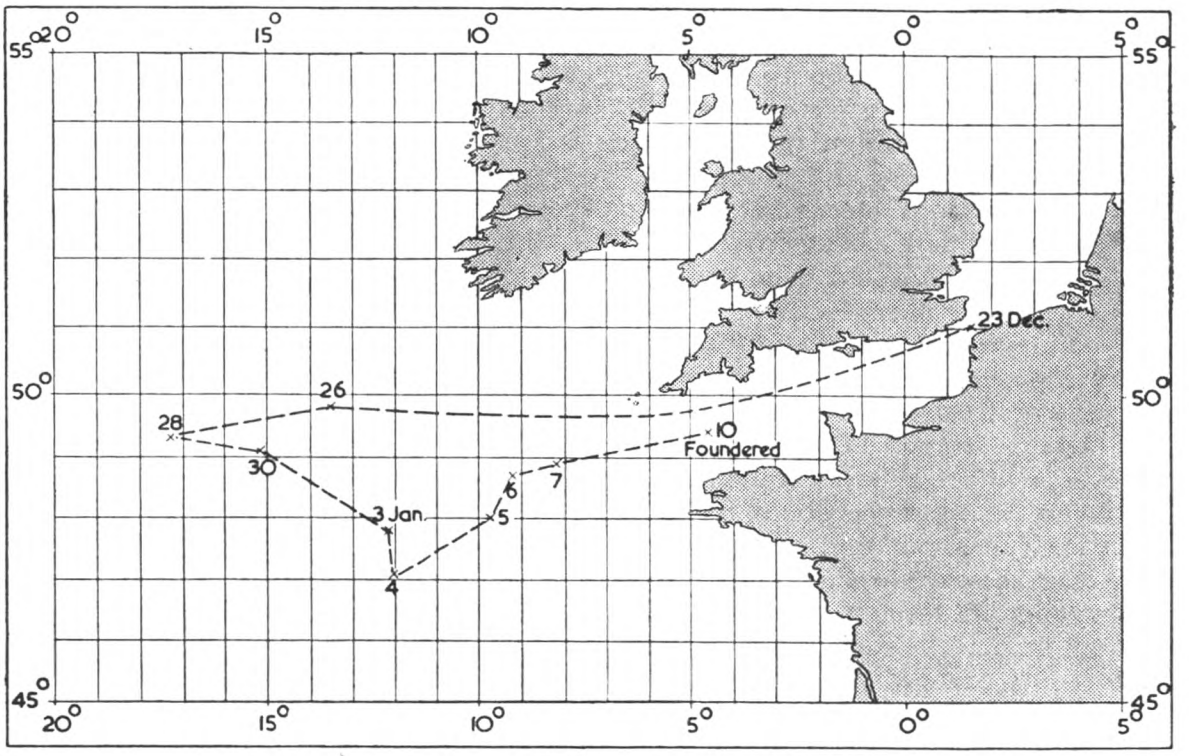


Fig. 1

The course of the S.S. *Flying Enterprise*, 25th December, 1951, to 10th January, 1952.

midnight on 27th at 52½°N, 29½°W, moved ENE'wards until about 0600 G.M.T. 28th and then moved ESE'wards (see Fig. 5), being centred over the English Channel at midnight on 28th. In the early hours of 28th the wind first backed and then veered at the passage of a warm front, and was between force 7 and 11 at this time. It veered at the passage of a cold front at about 0800 G.M.T. to WSW force 9 to 12 and then veered gradually to between WSW and WNW. At the passage of a secondary cold front at about 1330 G.M.T. the wind veered NNW or NW, the force then being 11 or 12. Squalls were frequent after the passage of this secondary cold front, and the S.S. *Beaverburn*, Captain R. A. Leicester, O.B.E., reported fierce squalls on both 27th and 28th in the vicinity of the *Flying Enterprise*. The following information contained in the meteorological reports of the British Selected Ship M.V. *Sherborne* (Captain R. A. McInnes) are of interest:

28th December, 1951. 1200 G.M.T. Position 49° 36′N, 19° 11′W. Wind 280°, force 12. Screen and thermometers broken by sea hitting bridge. Present and past weather reports included squalls. Waves 280°, period 13 sec., height 30 ft. Remarks: Hurricane force winds, visibility nil. Waves at least 40 ft. in height at times, distance (crest to crest), 500 ft.

28th December, 1951. 1800 G.M.T. Position 49° 50′N, 18° 10′W. Wind 300°, force 9. Present and past weather reports included squalls. Waves 300°, period 10 sec., height 25 ft. Remarks: Wind inclined to veer. Heavy rain and hail. Squalls. Sea losing some of its fierceness.

The *Sherborne* reported confused waves at 1800 G.M.T. 27th at 48° 45′N, 23° 30′W, and at 0000 G.M.T. 28th at 49° 04′N, 21° 58′W.

The depression, centred at 48½°N, 40½°W, at midnight on 28th, with a central pressure of 990 mb., moved NE'N on 29th and deepened, being positioned at 57°N, 15°W, at midnight of that day, with a central pressure of 979 mb. It deepened further until at 1200 G.M.T. on 30th the central pressure was 960 mb., the depression then being centred at 59°N, 04°W. On 29th the wind was generally between NW and SSW force 7 or 8 in the vicinity of the *Flying Enterprise*, but decreased in strength on 30th. It probably became easterly temporarily in the late

evening, as a wave depression, centred at 46½°N, 31½°W, at 0600 G.M.T. on 30th, moved eastwards to the south of the *Flying Enterprise*, the wave depression being centred near the Cherbourg Peninsula at 1500 G.M.T. on 31st. North-westerly winds of force 7 to 9 were again experienced by the *Flying Enterprise* during the afternoon and evening of 31st, after the passage of the wave in the early hours.

All the passengers and crew, with the exception of Capt. Carlsen, had been picked up on 29th December by two American steamers. On the morning of 2nd January the U.S. destroyer *John W. Weeks* relieved the U.S. supply ship *Golden Eagle* which had been standing by the helpless vessel; the wind was then W or WNW force 6-8. At about 0800 G.M.T. on the next day (3rd), the British tug *Turmoil* arrived on the scene; the wind was then NW'ly force 6, but the *John W. Weeks* reported very rough seas with long heavy swell. On 4th the wind was generally between force 3 and 6, and it was on this day that the mate of the *Turmoil*, Mr. Dancy, jumped aboard the *Flying Enterprise*. Weather and sea conditions, however, still prevented a tow line being fixed and it was not until 0937 G.M.T. on 5th, when the wind was about WSW'ly force 4, that the tow line was finally secured. From then to about mid-day on 8th January, as efforts continued to be made to bring the vessel into Falmouth, a westerly sequence of weather prevailed, with winds generally force 2-5. The wind strength increased after about mid-day on 8th, and during the early hours of 9th the wind was W'ly force 5-6. At 0155 on 9th the tow-line parted, when the vessel was 10 miles south-west of the Lizard. One factor in the cause of this was probably that there was a cross swell, which is not infrequent in this area. The waves at this time were 20-25 ft. On 9th, the whole of the British Isles was under the influence of a deep depression centred between Jan Mayen and the Norwegian coast, and at 1200 G.M.T. on 9th, the wind in the vicinity of the *Flying Enterprise* was about WNW force 6. However, a wave on the polar front, centred at 58°N, 41½°W, at 1200 G.M.T. on 9th was moving ENE'wards and later turned ESE'wards. This wave, centred at 54°N 03°W, at 1200 G.M.T. on 10th (see Fig. 9), with its associated frontal system, was responsible for increasing the wind strength in the vicinity of the *Flying Enterprise* during the morning of 10th to about force 8. At 1612 G.M.T., the *Flying Enterprise*, after listing 70° and rolling to 85°, sank.

During the period 26th to 28th December many radio weather messages from ships in the vicinity referred to waves of 30 ft. or over with length of about 500 ft. When it is known that the length of the *Flying Enterprise* was 396 ft., it is obvious that these waves must have caused considerable stress on the vessel. Further, the confused waves and fierce squalls reported must have increased the stresses. The cracking of the hull reportedly had little effect as regards the final loss of the vessel, and the direct cause of the loss was the apparent breaking of the rudder stock due to taking an extremely heavy sea. This caused loss of control of the vessel, which fell off into the trough of a sea, resulting in excessive rolling and shifting of the cargo. This casualty is an example of a ship not being able to withstand the stress of very bad weather conditions.

I am indebted to Captain E. H. Thiele, U.S.C.G., for his helpful comments on the causes of the loss, and to Mr. J. M. Craddock for further helpful comments.

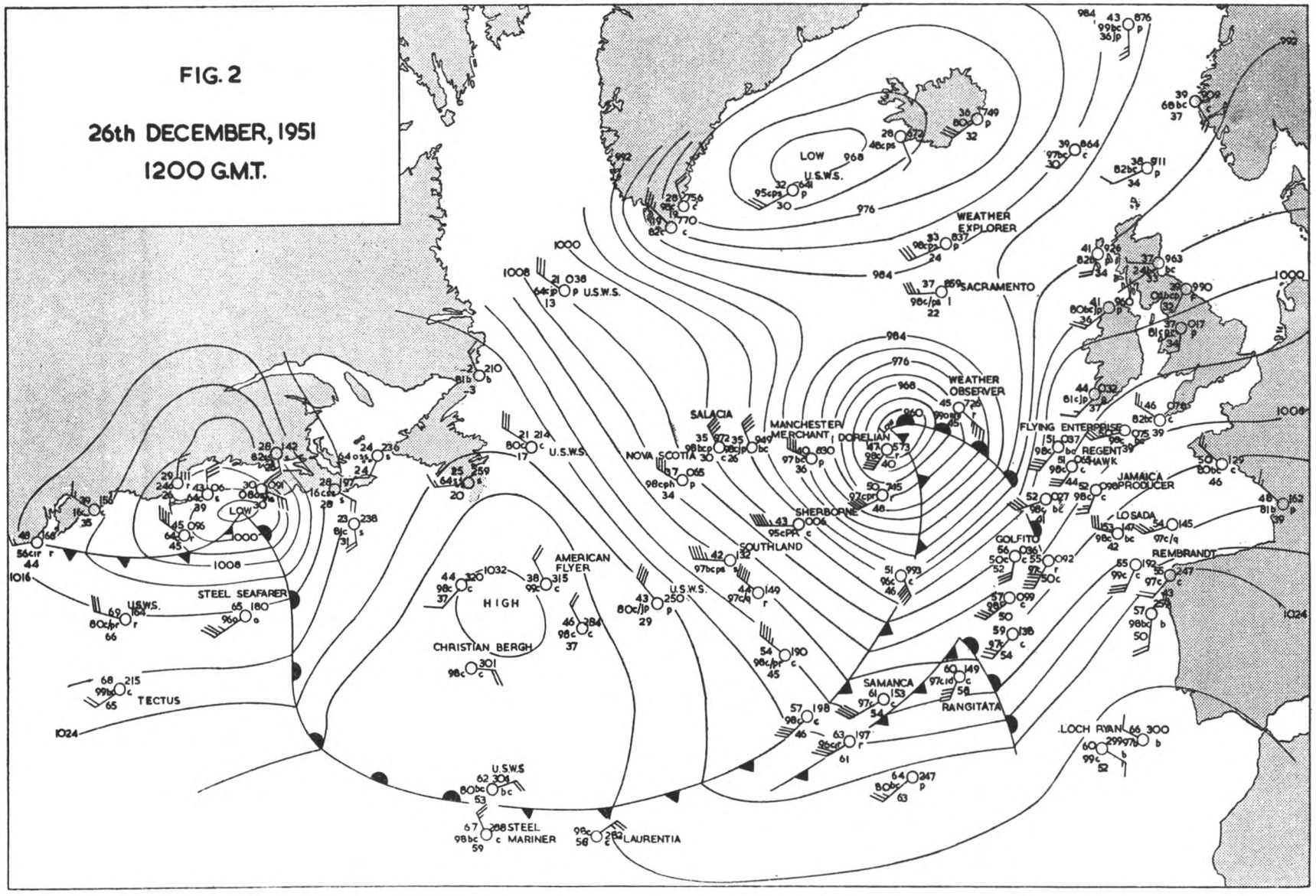


FIG. 2
26th DECEMBER, 1951
1200 G.M.T.
LOW
U.S.W.S.
WEATHER EXPLORER
SACRAMENTO
WEATHER OBSERVER
SALACIA
MANCHESTER MERCHANT
DORELIAN
NOVA SCOTIA
FLYING ENTERPRISE
REGENT
HAWK
JAMAICA PRODUCER
SHERBORNE
SOUTHLAND
LOSADA
GOLFITO
REMBRANDT
STEEL SEAFARER
AMERICAN FLYER
HIGH
CHRISTIAN BERGH
TECTUS
SAMANCA
RANGITATA
LOCH RYAN
STEEL MARINER
LAURENTIA

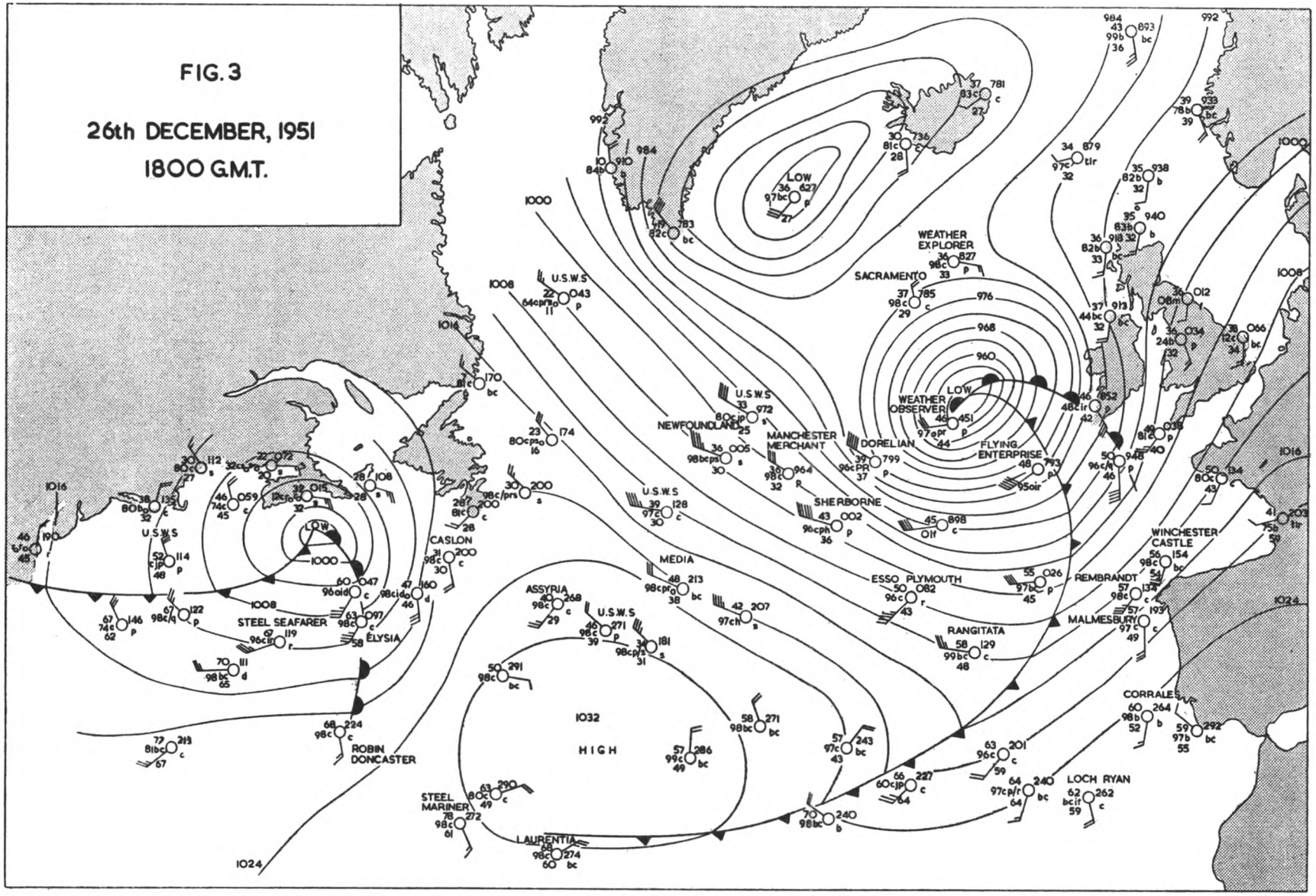


FIG. 3
26th DECEMBER, 1951
1800 G.M.T.
LOW
WEATHER EXPLORER
SACRAMENTO
U.S.W.S
WEATHER OBSERVER
NEWFOUNDLAND
MANCHESTER MERCHANT
DORELIAN
FLYING ENTERPRISE
SHERBORNE
CASLON
MEDIA
ASSYRIA
ESSO PLYMOUTH
REMBRANDT
WINCHESTER CASTLE
MALMESBURY
RANGITATA
STEEL SEAFARER
ELYSIA
ROBIN DONCASTER
1032
HIGH
STEEL MARINER
LAURENTIA
CORRALES
LOCH RYAN

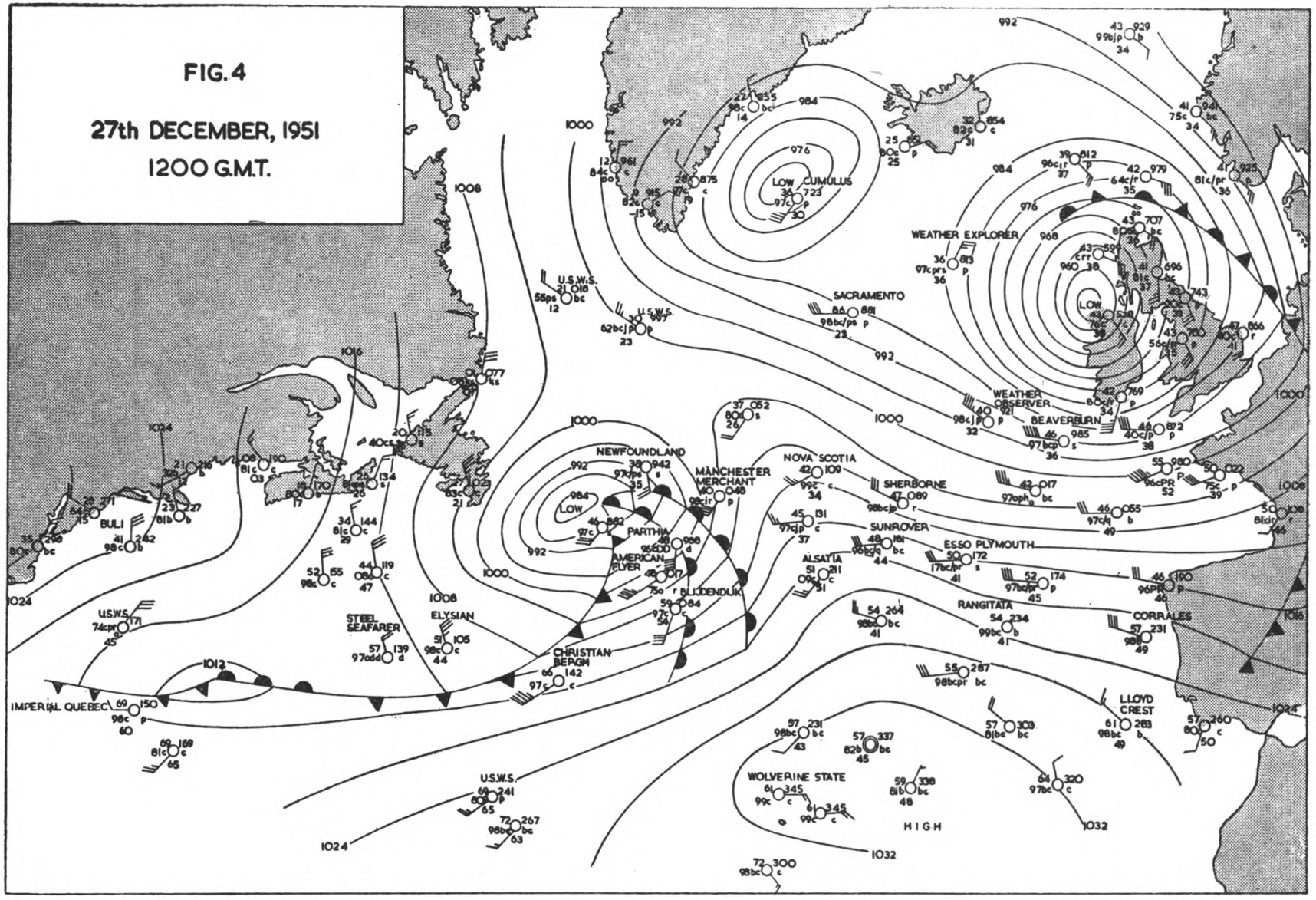


FIG. 4
27th DECEMBER, 1951
1200 G.M.T.
LOW CUMULUS
WEATHER EXPLORER
SACRAMENTO
LOW
WEATHER OBSERVER
BEAVERBURN
NEWFOUNDLAND
LOW
MANCHESTER MERCHANT
NOVA SCOTIA
SHERBORNE
SUNROVER
ESSO PLYMOUTH
PARTHIA
AMERICAN FLYER
BLIJDENDIJK
ALSATIA
RANGITATA
CORRALES
LLOYD CREST
BULI
STEEL SEAFARER
ELYSIAN
CHRISTIAN BERGH
IMPERIAL QUEBEC
U.S.W.S.
WOLVERINE STATE
HIGH
1000
1008
1016
1024
1032
992
984
976
968

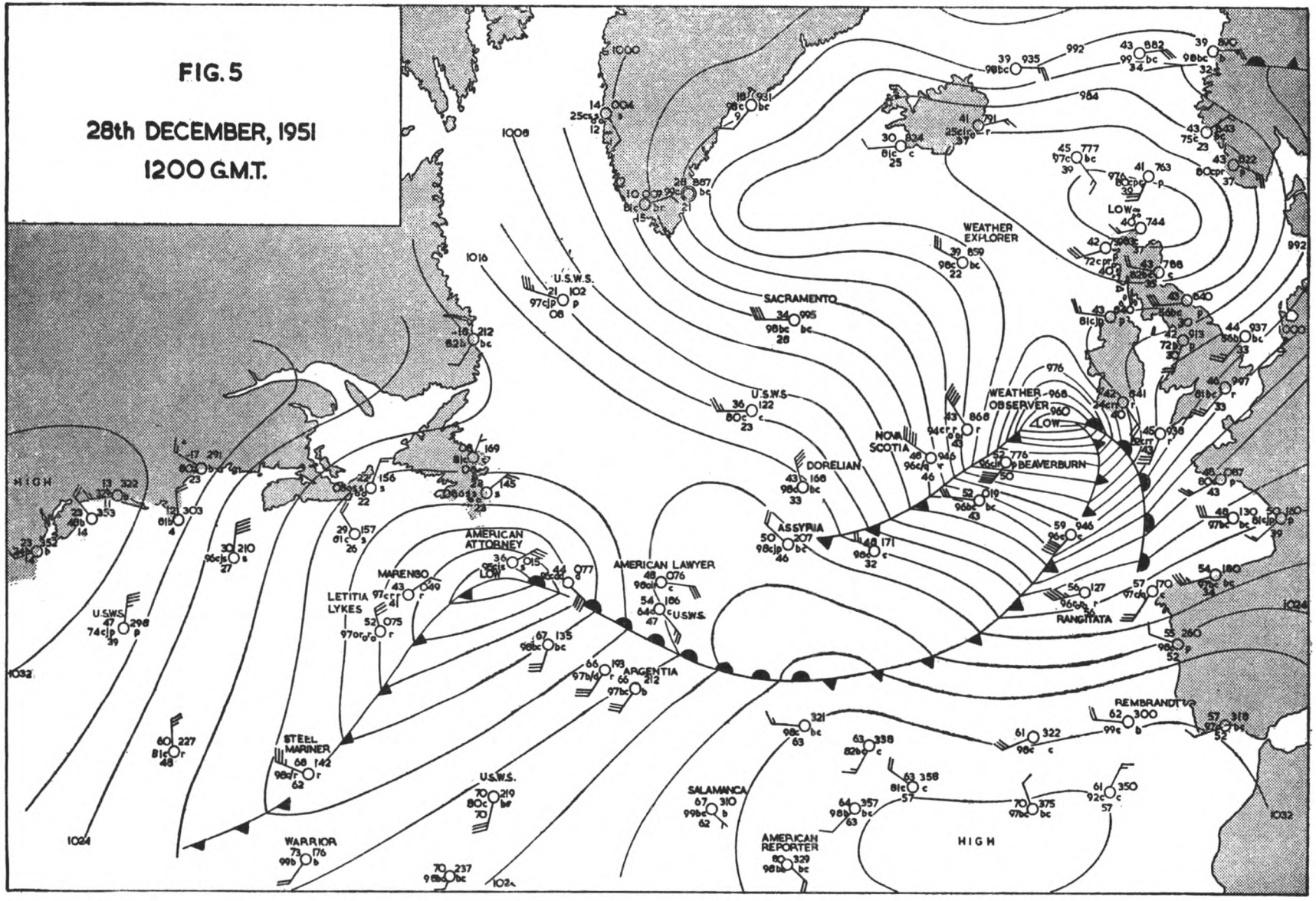


FIG. 5
28th DECEMBER, 1951
1200 G.M.T.
HIGH
WEATHER EXPLORER
SACRAMENTO
U.S.W.S.
WEATHER OBSERVER
LOW
NOVA SCOTIA
DORELIAN
BEAVERBURN
ASSYRIA
AMERICAN ATTORNEY
AMERICAN LAWYER
MARENBO
LETITIA LYKES
ARGENTIA
RANGITATA
REMBRANDT
STEEL MARINER
WARRIOR
SALAMANCA
AMERICAN REPORTER
1000
1008
1016
1024
1032

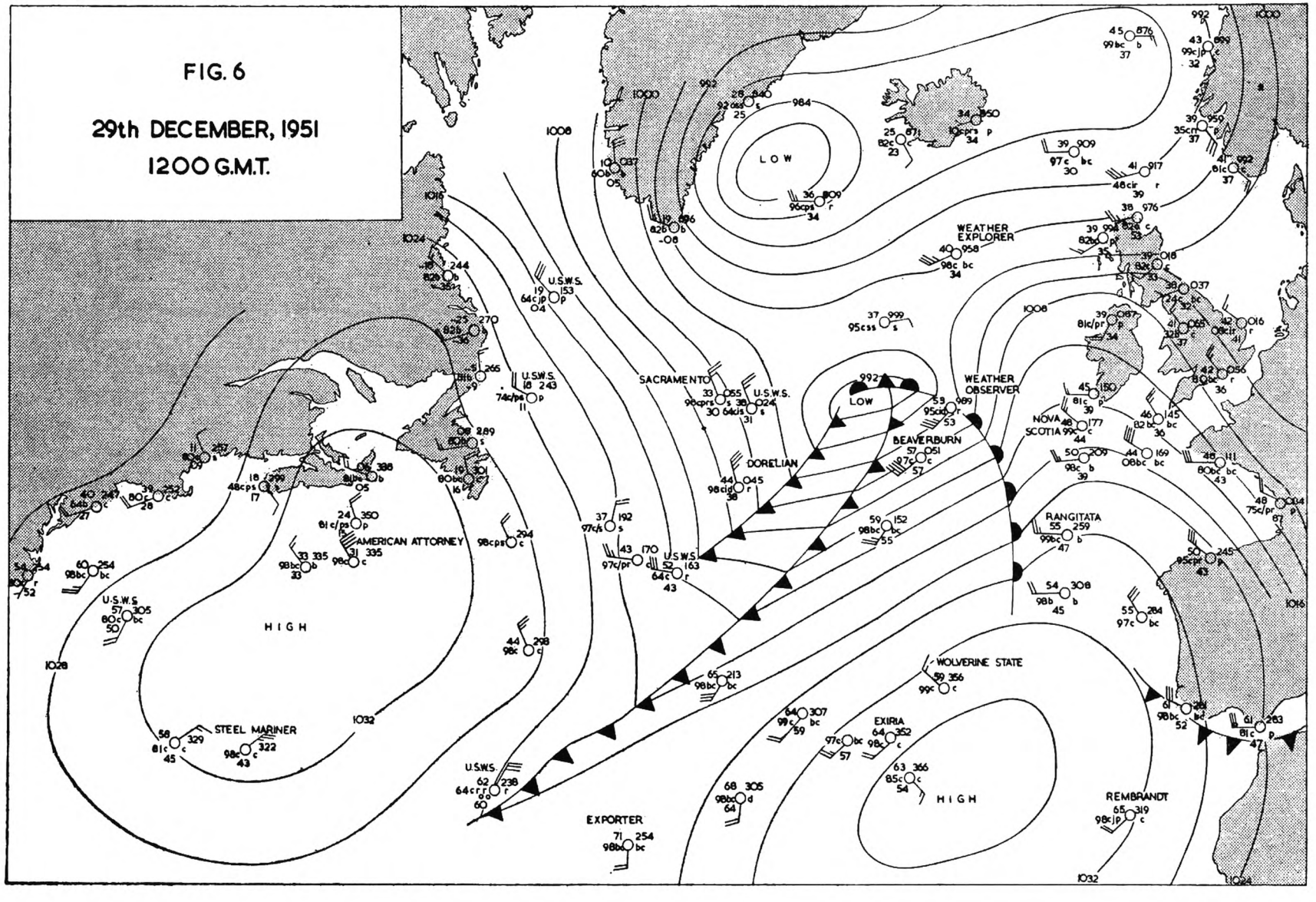


FIG. 6
29th DECEMBER, 1951
1200 G.M.T.
LOW
HIGH
LOW
HIGH
WEATHER EXPLORER
WEATHER OBSERVER
SACRAMENTO
DORELIAN
BEAVERBURN
NOVA SCOTIA
RANGITATA
AMERICAN ATTORNEY
STEEL MARINER
WOLVERINE STATE
EXIRIA
REMBRANDT
EXPORTER
U.S.W.S.
1000
1008
1016
1024
1032
992
984
1028

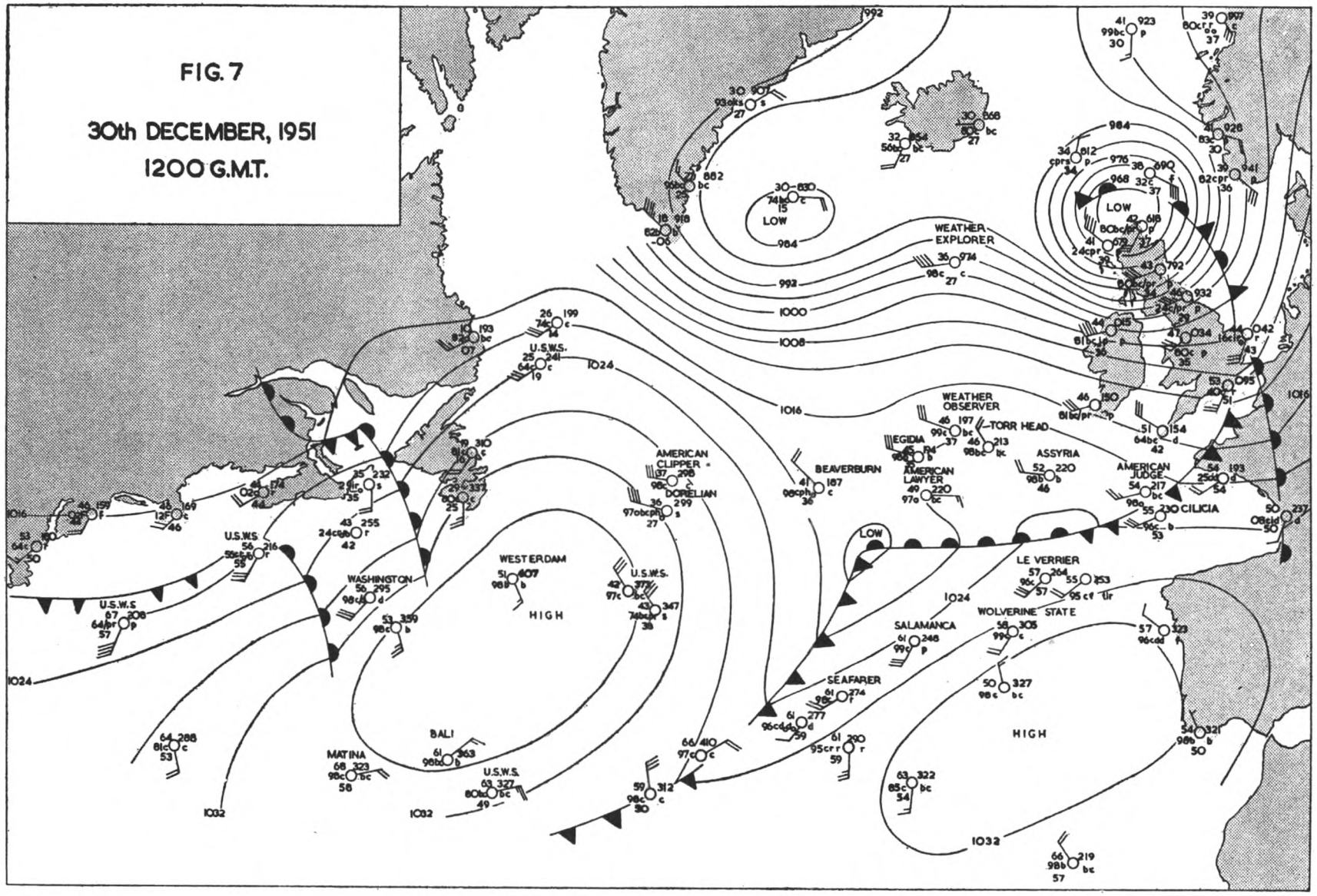


FIG. 7
30th DECEMBER, 1951
1200 G.M.T.
LOW
HIGH
WEATHER EXPLORER
WEATHER OBSERVER
TORR HEAD
AMERICAN CLIPPER
DORELIAN
BEAVERBURN
AMERICAN LAWYER
ASSYRIA
AMERICAN JUDGE
CILICIA
LE VERRIER
WOLVERINE STATE
SALAMANCA
SEAFARER
WESTERDAM
WASHINGTON
BALI
MATINA
U.S.W.S.
984
992
1000
1008
1016
1024
1032

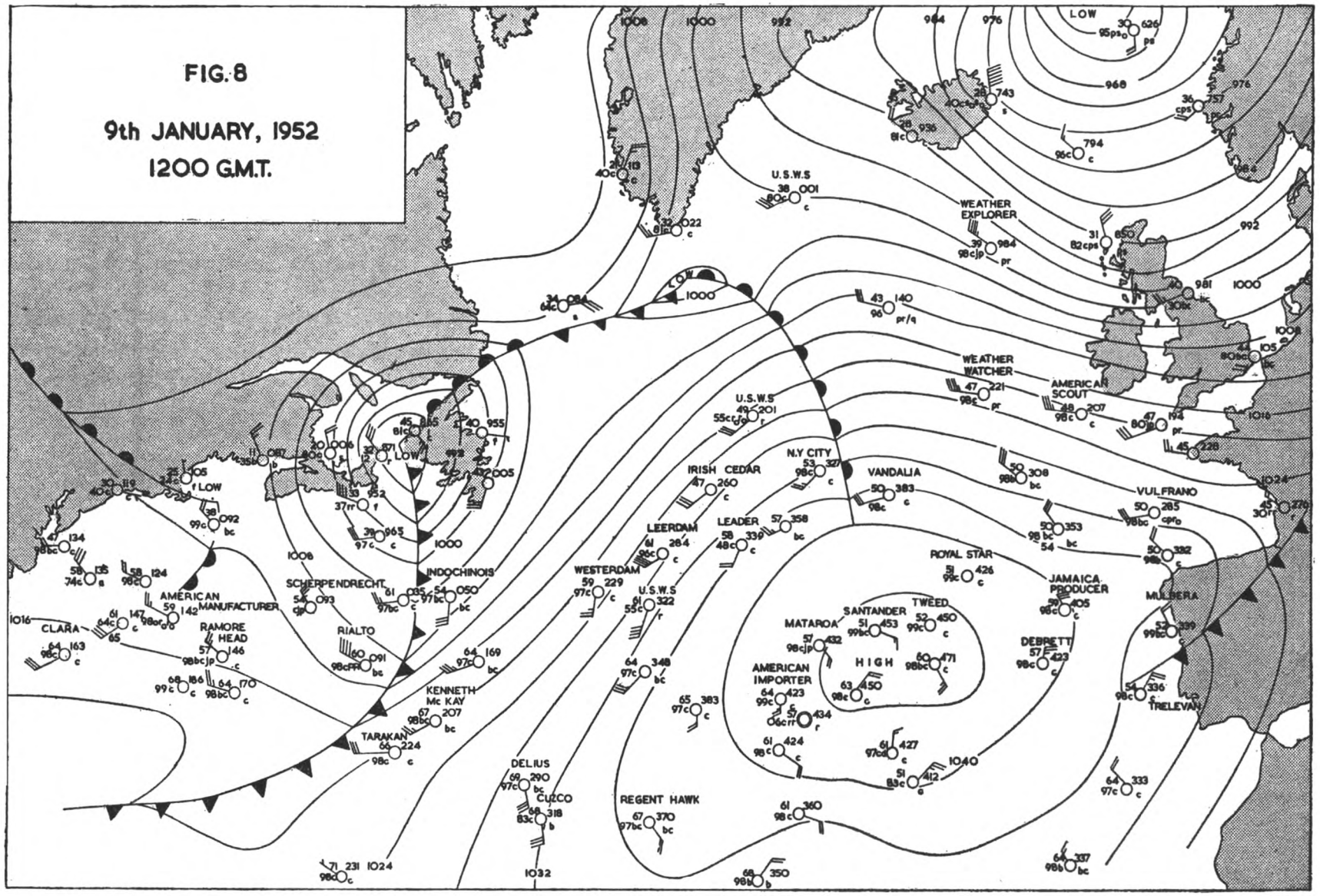


FIG. 8
9th JANUARY, 1952
1200 G.M.T.
LOW
HIGH
1000
1008
992
976
960
1016
1024
1032
1040
WEATHER EXPLORER
WEATHER WATCHER
AMERICAN SCOUT
U.S.W.S
N.Y. CITY
IRISH CEDAR
VANDALIA
VULFRANO
LEERDAM
LEADER
WESTERDAM
INDOCHINOIS
SCHEPPENDRECHT
RIALTO
AMERICAN MANUFACTURER
CLARA
RAMORE HEAD
KENNETH Mc KAY
TARAKAN
ROYAL STAR
JAMAICA PRODUCER
MULNERA
TWEED
SANTANDER
MATAROA
AMERICAN IMPORTER
DEBRETT
TRELEVAN
DELIUS
CUZCO
REGENT HAWK

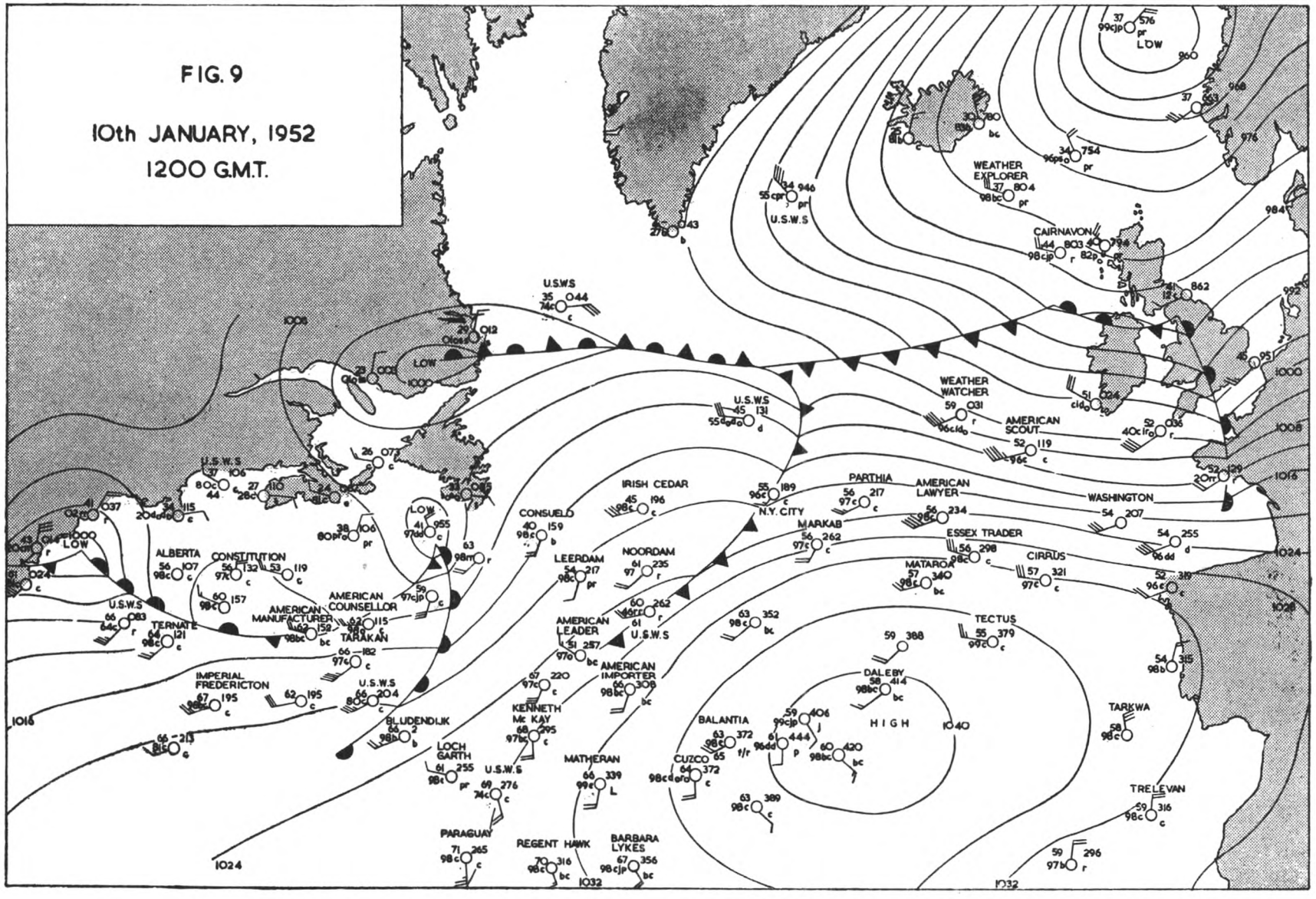


FIG. 9
10th JANUARY, 1952
1200 G.M.T.
LOW
HIGH
WEATHER EXPLORER
CAIRNAVON
WEATHER WATCHER
AMERICAN SCOUT
PARTHIA
AMERICAN LAWYER
WASHINGTON
IRISH CEDAR
CONSUELO
N.Y. CITY
MARKAB
ESSEX TRADER
CIRRUS
MATAROA
TECTUS
DALEBY
TARKWA
TRELEVAN
BALANTIA
CUZCO
MATHERAN
LEERDAM
NOORDAM
AMERICAN LEADER
AMERICAN IMPORTER
KENNETH Mc KAY
LOCH GARTH
PARAGUAY
REGENT HAWK
BARBARA LYKES
ALBERTA
CONSTITUTION
TERNATE
TARAKAN
AMERICAN COUNSELLOR
AMERICAN MANUFACTURER
IMPERIAL FREDERICTON
BLUDENDIJK
U.S.W.S
1000
1004
1008
1012
1016
1020
1024
1028
1032
1036
984
988
992
996
976
960

Planet News

Plate 6

A photograph of S.S. *Flying Enterprise* on the morning of 10th January, 1952. The tow-line with the tug *Turmoil* having parted the previous day, the freighter is drifting helplessly before a freshening WNW wind reaching force 8 at times (see page 136).

Daily Gleaner

Plate 7

The *Caribcemco*, a small cargo steamer, driven ashore within 3 yards of the Kingston-Palisadoes road, as a result of the hurricane at Jamaica, August, 1951. A note sent in by the *Jamaica Producer*, which experienced this hurricane in Kingston Harbour, is printed on page 155.

To face page 145

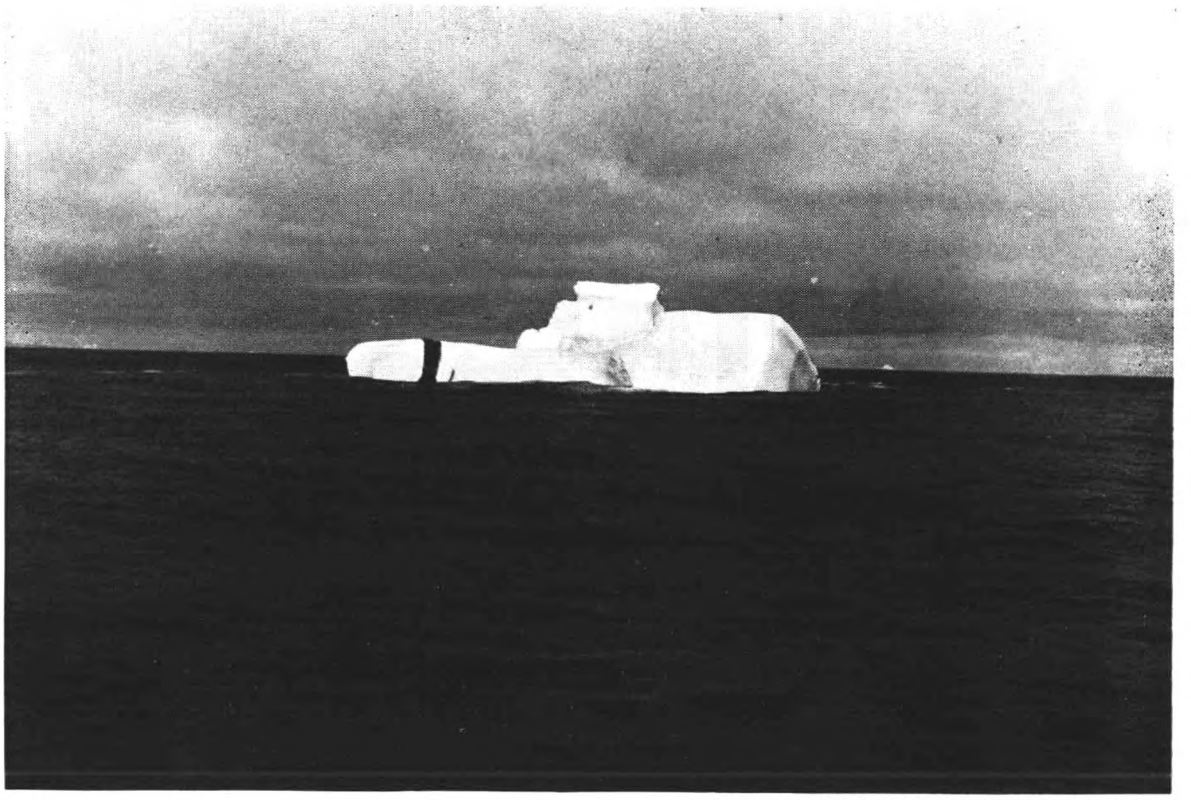


Photo by National Institute of Oceanography

Plate 8

Iceberg with a black marking photographed from R.R.S. *Discovery II* on 20th February, 1951, at approximate position 63°S, 90°E.

Photo by National Institute of Oceanography

Plate 9

Discovery II labouring in 35 ft. seas in a SW'ly gale.

Weather experienced by the *Weather Observer* on 26th–27th December, 1951

The depression mentioned in the article " Loss of the *Flying Enterprise* " (see pages 134-144) as being centred at 48½°N, 36°W, at midnight on 25th December, 1951 (see Figs. 3, 4, and 5 on pages 138 to 140), was extremely intense. The O.W.S. *Weather Observer* at Station JIG first came under the influence of this depression between 0300 and 0600 G.M.T. on 26th December, and the depression centre passed close to, and to the north of, the vessel at about 1900 G.M.T. on that day.

The weather experienced by the *Weather Observer* is perhaps best portrayed by the following extracts from a special report by Mr. I. P. MacIntosh, Meteorological Officer-in-charge:

26th December, 1951

0600 Surface wind 290°, 20 kt. Waves 290°, 22 ft. Barometer 995·8 mb., starting to fall.
0630 Wind backing rapidly. Barometer falling more steeply.
0930 Continuous slight rain commenced.
1000 Gale commenced. Gusts up to 75 kt. Barometer falling more steeply.
1340 Rain ceased. Surface wind 170°, 50 kt. Barometer has been falling at more than 10 mb. per hour. Now easing slightly.
1520–1740 Showers, heavy at times.
1800 Surface wind 270°, 23 kt. Barometer 945·1 mb., falling less steeply.
1900 Wind again reached gale force.
1940 Barometer starting to rise. Lowest reading observed 938·4 mb.
2100 Surface wind 310°, 70 kt. Waves 300°, 22 ft. Barometer rising rapidly. Gusts observed to 100 kt. Impossible to observe sky. Visibility reduced to 200–500 yd. by spray.

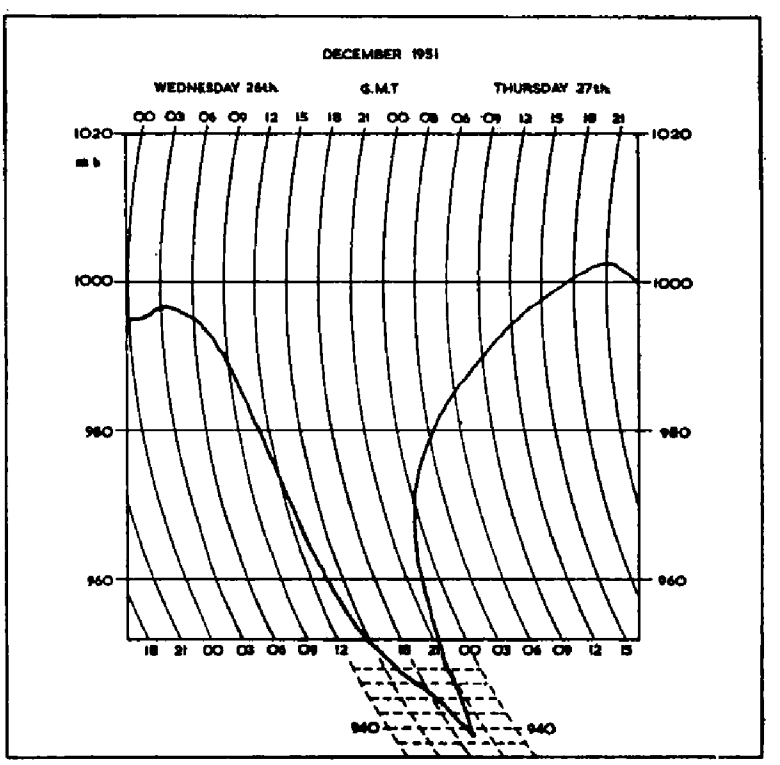


Fig. 1
Barogram from O.W.S. *Weather Observer* at Station JIG during the storm of 26th-27th December, 1951.

27th December, 1951

0001 Surface wind 290°, 60 kt. Waves 300°, 25 ft. Barometer rising rapidly. Gusts to 90–100 kt. (Wind speed indicator exceeding full scale deflection of 90 kt.) Sky obscured by spray.
0155 Heavy hail.
0300 Surface wind 280°, 50 kt. Sky obscured by spray. Gusts to 80–90 kt.
0600 Sky obscured by spray. Gusts to 80 kt.
0715 Sky visible. 2/8 Cb.
0900 Surface wind 295°, 42 kt. Waves 290°, 40 ft. Occ. waves to 50 ft.
1800 Surface wind 310°, 45 kt. Barometer 1001·1 mb. Waves 290°, 40 ft. Gusts to 60–65 kt.
2145 Gale ceased.

Damage suffered by meteorological equipment:

(*a*) After shipboard screen (above balloon shed) carried away.
(*b*) Roof of after D.R. thermograph screen removed.
(*c*) Door of forward D.R. thermograph screen removed.
(*d*) Hydrogren cylinders torn from racks.
(*e*) Cone in balloon shed smashed and torn down.
(*f*) Cups to wheelhouse anemometer twisted; one cup had metal ripped.

During the period 2100 on 26th until 0300 on 27th gusts in excess of 85 kt. were being experienced very frequently—approximately two or three every five minutes —and many of these were sustained for 30 seconds.

The following are extracts from the report of the master, Captain N. F. Israel, D.S.C.:

26th December, 1951

From 2000 Vessel pitching, rolling and working violently. Shipping seas.
1940 Wind of such intensity unable to hold ship's head up on 90 revs. Turned and commenced running before wind at 60 revs.
2100 Some aerials down and beacon out of action.

Note. In hour 1930–2030 sea from being rough became one " boiling " mass of white, with continuous driving spray at mast height.

27th December, 1951

Vessel pitching, rolling and working violently throughout. Shipping seas.
0700 Shipped heavy sea port amidships. Wooden door outside galley carried away and all cabins in port alleyway flooded.
0800 Shipped heavy sea against funnel. This filled centre smoke box with soot and flooded stokehold.

Note. As wind died down seas increased. Waves averaging about 40 ft. with occasional ones up to 50 ft. Vessel hove-to successfully, which speaks well for construction, design and particularly length of corvettes.

Fig. 1 shows the barograph of the *Weather Observer* during the period 26th to 27th December, 1951. The lowest pressure recorded by the barometer was 938·4 mb. at about 1940 G.M.T. on 26th, and the centre of the depression was probably about 30 miles away as it passed ENE'wards to the north of the ship.

These meteorological extracts are probably interesting to a seaman because they are so complete. The gale followed the general pattern of any other gale, but appears to have been considerably more intense than the average experienced in the North Atlantic. A significant feature of these meteorological extracts for the seaman is that the strongest winds and highest seas occurred after the cold front had passed and after the barometer had started to rise. This is frequently the case in the southern segment of a North Atlantic depression due chiefly to instability. This is borne out in the following article by P. R. Brown.

The Depression of December 26th–27th, 1951

By P. R. BROWN, M.Sc., A.R.C.S., D.I.C.
(Marine Branch, Meteorological Office)

The depression which was centred at 48½°N, 36°W, at midnight on 25th December, 1951, was extremely intense and it travelled ENE'wards, being centred at 52°N, 25°W, at noon on 26th and over central Scotland at midnight on 27th. It deepened rapidly during 26th up to about 1800–2100, and started to occlude just before 1800 on that day. The central pressure was 981 mb. at 0000 on 26th and was probably about 937 mb. at 2000 on that day. The depression filled up rapidly after about 1200 on 27th and the central pressure was 965 mb. at midnight. This depression, apart from being instrumental in the loss of the S.S. *Flying Enterprise*, did much damage to shipping and gusts of at least 100 kt. were experienced in its central area.

The O.W.S. *Weather Observer*, on station at position JIG, was at one time just south of the centre of the depression, and probably about 20–30 miles from it at some time between 1900 and 2000 G.M.T. on 26th. Thus the wind records of the

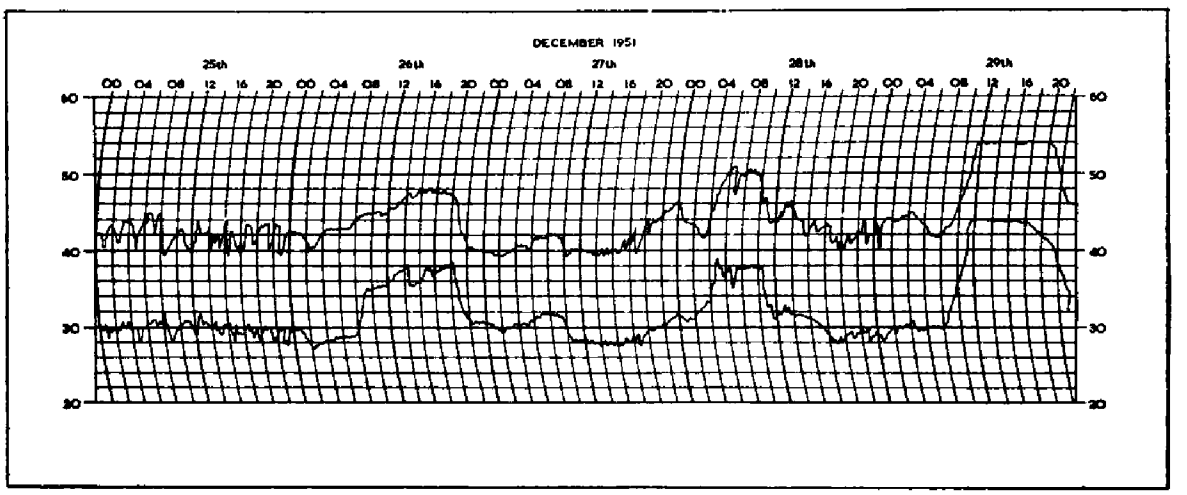


Fig. 1

Combined thermogram and hygrogram from O.W.S. *Weather Observer* at Station JIG, 25th-29th December, 1951. Upper trace, dry bulb temperature; lower trace, wet bulb temperature.

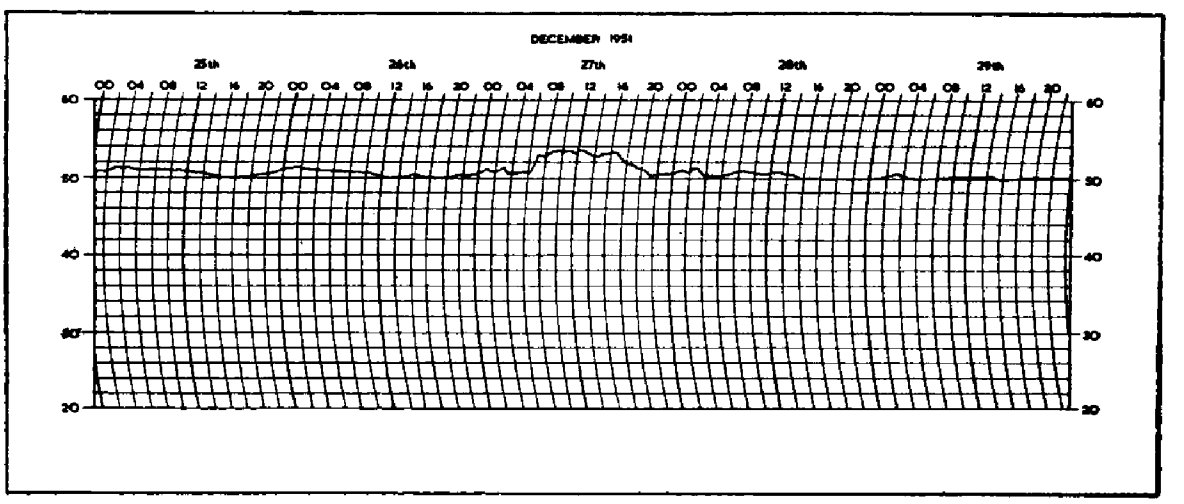


Fig. 2

Sea temperature thermogram from O.W.S. *Weather Observer* at Station JIG, 25th-29th December, 1951.

Weather Observer can be used to give an indication of the wind profile of the depression in relation to distance from the isobaric centre and in relation to the barometric pressure observed at the ship. The warm sector of the depression was only narrow where it passed the *Weather Observer*. The warm front passed about 1400 on 26th, while there appears to have been a cold front passage about 1600. The thermograph record of the ship (see Fig. 1), however, suggests a cold front passed at 2000 of that day, and it is possible that the cold front was of double structure. The surface air in the warm sector was not tropical, there being a polar front to the south of the frontal system associated with the centre of the depression (see weather chart on page 137): the air was returning maritime polar and, in view of this and the fact that there was only one routine observation in the warm sector, no distinction was made between cold and warm air in plotting the wind profiles.

The observed wind speed in knots was plotted against distance of the *Weather Observer* from the isobaric centre for the period 0600 26th to 0000 28th December, 1951, and the results are shown in Fig. 3. Goldie[1, 2], from a study of several depressions in the period 1929 to 1936, reached the following amongst other conclusions:

(*a*) In a certain region outside the central area, the average surface air motion, notably in the cold air, approximates to a simple vortex (vr = constant where v is the wind velocity and r distance from the isobaric centre).

(*b*) In the polar part of the central area, on the other hand, there is sometimes, but not always, an approximation of the average speed to direct proportionality to distance from the centre (v/r = constant). In the cases examined this was found not to be genuine " solid rotation ", there being considerable incurvature, and the dynamical conditions for a disc of air spinning like a solid and having a general translational motion were not satisfied.

(*c*) There was evidence that the central polar area, characterised by the approximate v/r = constant type of motion, increases in diameter with the life of a depression.

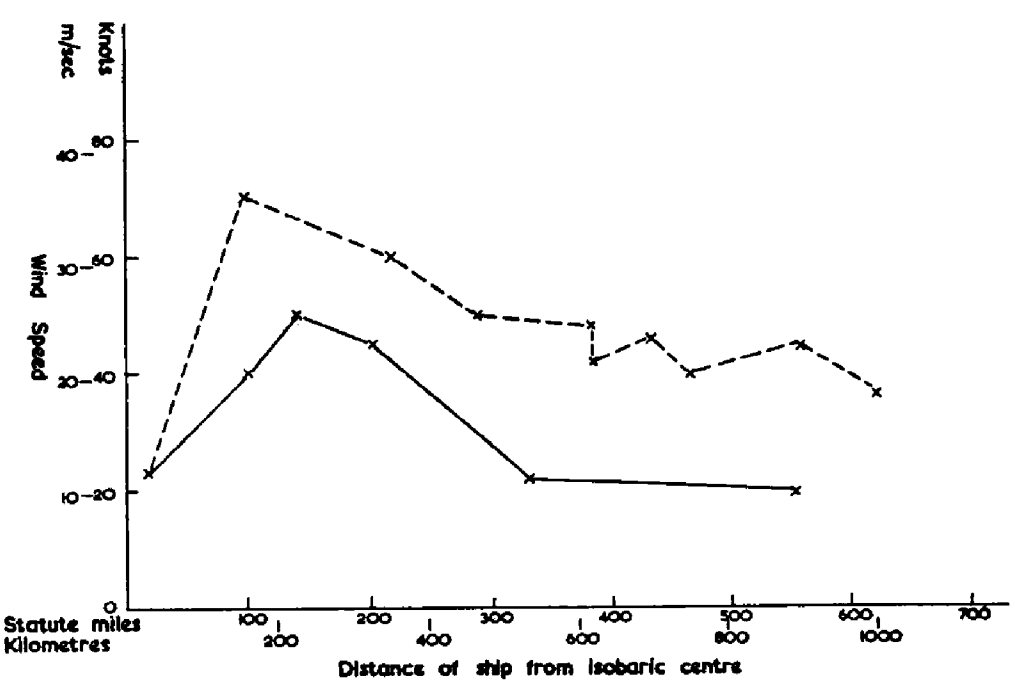


Fig. 3

Graph showing the relationship between wind speed and distance of *Weather Observer* from centre of depression. Firm line, centre of depression west of ship; dashed line, centre of depression east of ship.

Fig. 3 supports Goldie's first conclusion, in that it shows a wind profile that, outside a central area, approximately represents vortical motion, but *vr* increases slightly with increasing distance from the centre. The few observations in the central area also indicate a motion that conforms to the approximate " solid rotation " mentioned in Goldie's second conclusion. The results also support the theory, mentioned by Goldie, that the polar air in front of a depression does not attain the same speeds, at a given distance from the centre, as does the rest of the polar air. Goldie found that the inner limit of the simple vortical motion in most of the depressions he studied was between 400 and 500 km. from the isobaric centre, although in the depression of 26th–28th October, 1936, the vortex, though—or possibly because—its *vr* product was less than in any of the others, was maintained at least up to within 280 km. of the isobaric centre, with a maximum hourly mean wind speed of about 29 m./sec. In the depression of 26th–27th December, 1951, the vortex was maintained to within 150–225 km. of the isobaric centre: the maximum wind speed in this case was 70 kt. (36 m./sec.) and the *vr* product in the inner part of the vortex was even less than in the depression of 26th–28th October, 1936. The fact that the vortex was maintained to within a smaller distance from the centre in the depression of December, 1951, supports Goldie's third conclusion above; the observations he used were made in the British Isles, while those used for this article were made in mid-Atlantic, where depressions such as those studied are normally younger. The wind profile in relation to the barometric pressure at the *Weather Observer* is given in Fig. 4. It must be remembered in comparing the results obtained from wind observations at an Ocean Weather Ship and those from the coastal stations used by Goldie, that the ratio of surface wind velocity to gradient wind velocity is higher at sea than at coastal stations (see Gordon[3]).

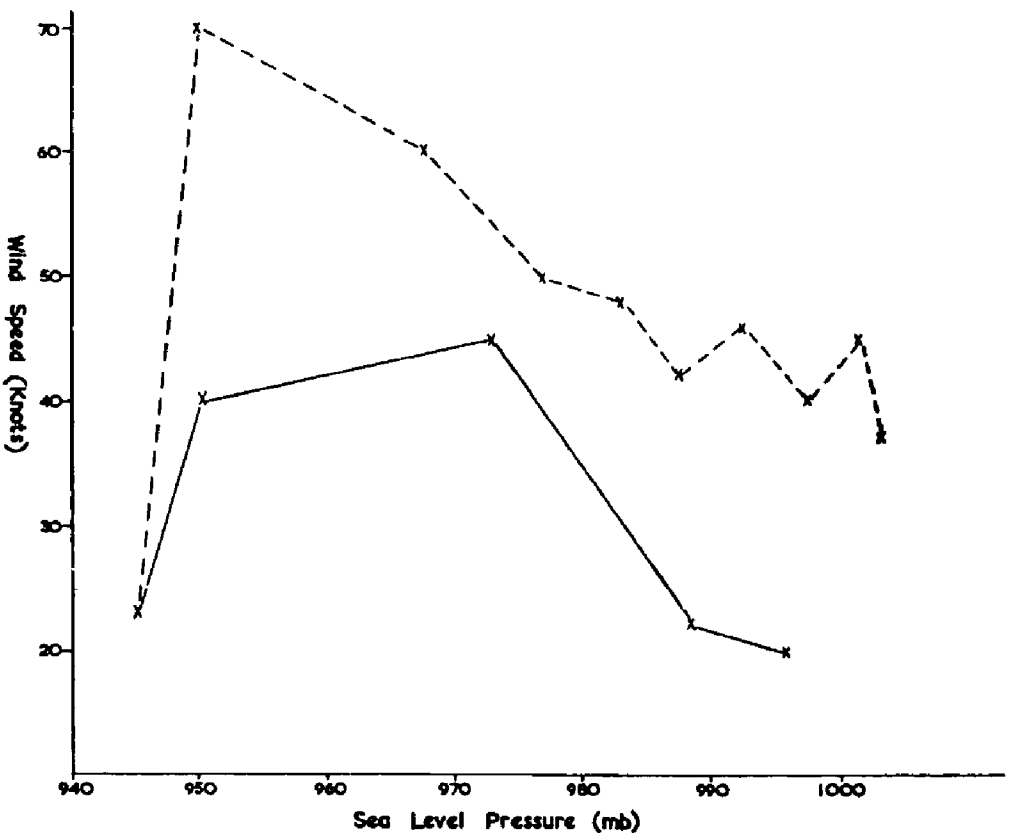


Fig. 4

Graph showing relation between wind speed and sea level atmospheric pressure at Station JIG, 26th-27th December, 1951. Firm line, centre of depression west of ship; dashed line, centre of depression east of ship.

Another interesting feature of the records of the *Weather Observer* during the depression of 26th–27th December, 1951, was a marked increase in sea temperature between 0600 and 1600 G.M.T. on 27th, as shown by the engine-room intake sea thermograph (see Fig. 2). This higher sea temperature, confirmed by the sea temperatures as measured by the bucket method, was some 22 hours later than the higher air temperatures observed during the warm sector passage (see Fig. 1), and although both were of approximately the same duration, it does not seem possible that the two have any direct physical connection. No physical explanation of this rather unusual sea temperature rise is obvious, but one possible one is that it was caused by high waves bringing up water from a subsurface level, where the temperature was higher than at the surface, since the time of occurrence of the highest waves approximates to that of this greatest sea temperature.

The positions of weather systems and fronts at various times were estimated from the Senior Forecaster's synoptic charts of the Central Forecasting Office, Dunstable.

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[1]GOLDIE, A. H. R. Kinematical Features of Depressions. *Geophys. Mem.* **8**, No. 72, London, 1937.

[2]GOLDIE, A. H. R. Depressions as Vortices. *Geophys. Mem.* **9**, No. 79, London, 1939.

[3]GORDON, A. H. The Rate of the Observed Velocities of the wind at 50 ft. and 2,000 ft. over the North Atlantic Ocean. *Quart. J. R. Met. Soc.*, **309**, London, 1950, p. 344.

Meeting of the Challenger Society

At a meeting of the Challenger Society on 17th January, the papers which were read emphasised how close is the link between oceanography and meteorology, and how desirable it is that meteorologists and oceanographers should get together and help each other in solving their respective problems.

The first paper, by Dr. Deacon, Director of the National Oceanographical Institute, gave a general résumé of the various problems which oceanographers should tackle in the future. He mentioned, for example, how much the winds affect great ocean currents and how little we really know about the exact mechanism by which the currents are impelled and, in fact, whether the existence of certain ocean currents has a greater effect on the atmosphere than atmospheric conditions have upon the currents. He also stressed the important work that was needed to be done at the boundary of ocean and atmosphere so as to try and understand something more about the physics of this layer.

Dr. Wiseman, in his talk, gave some most interesting facts about the climatology which could be learned from a study of cores of sediment taken from the bottom of the ocean. With the aid of a graph he showed that examination of the composition of various cores which had been obtained in the North Atlantic showed almost exact agreement with known facts concerning the climatic changes which had occurred in Greenland, for example. His graph showed rhythmic cycles of warm and cold eras and he showed that about 1200 A.D. was the warmest period that had occurred since about 3000 B.C. His graph also showed that the last glaciation which had occurred was about 9000 B.C. His investigations appear to show that these warm periods which occur, not only affect the Northern Hemisphere but affect the whole world almost at the same time.

Professor Sheppard of the Imperial College of Science and Technology, in a paper entitled " Meteorology in relation to Oceanography ", produced some interesting thoughts about momentum transfer and heat transfer between ocean and atmosphere, the transfer of latent heat (evaporation) and precipitation, and discussed the relationship between the meteorological " engine " and the oceanographical " engine ". He showed that both the atmosphere and the ocean not only

have climatic changes but both had day-to-day changes which one might refer to in both cases under the heading of "meteorological". In the course of the discussion tribute was paid to the valuable work done by voluntary observers in merchant ships in collecting information from the oceans which alone could enable meteorologists and oceanographers to study some of these problems. The work of the merchant ships had to be supplemented by expeditions in special research ships for getting the oceanographical data, and aboard weather ships in order to get upper-air data over the oceans. C. E. N. F.

Amsterdam Island and Tristan da Cunha

For some time past the French expedition on Amsterdam Island in the South Indian Ocean (lat. 37° 49'S, long. 77° 34'E) has maintained a listening watch on 8,300 kc/s at their Station FIR2 between 0600 and 0615 and between 1200 and 1215 G.M.T. Weather reports received during these periods are retransmitted to Kerguelen and Heard Islands and relayed to Cape Town and Australia. Ships voyaging between Cape Town and Australia have therefore been asked by the South African Weather Bureau to transmit their messages to Amsterdam Island when between 60°E and 90°E if they are then not in radio touch with either Pretoria or Essendon. If, however, they are so in touch, they are encouraged to repeat to Amsterdam Island the messages addressed to Pretoria or Essendon when between these longitudes. Amsterdam Island will provide ships with actual weather reports on request.

Similar arrangements have been in operation at Tristan da Cunha in the South Atlantic (lat. 37° 03'S, long. 12° 19'W) for some time, where a watch on 500 kc/s is maintained at Station ZHP from 0645 to 0700, 0830 to 0900 and 1200 to 1230 G.M.T. Ships at sea in the vicinity equipped with medium-wave radio and unable to communicate with Cape Town radio are asked to send their weather reports to this station within these periods. Such reports are relayed to Met. Pretoria. Tristan da Cunha broadcasts weather reports daily at 1230 G.M.T. and this service is apparently much appreciated by ships on the route between South Africa and South American ports.

These arrangements are brought to the notice of masters of ships calling at Cape Town by the Port Meteorological Officer, and we are glad to note from a recent letter received from the Director of the South African Weather Bureau that they have accorded a very high degree of friendly co-operation. He goes on to say that the co-operation of ships at sea in the transmission of weather reports to Met. Pretoria has been splendid and that these reports have proved extremely valuable in the more accurate analysis of the ocean areas. His records show that reports have been received at one time or another from over 1,500 ships of all nationalities and, on the average, about 90 messages a day are being received, exclusive of those from whaling factory ships.

Tristan da Cunha is a British island distant about 1,500 miles west of Cape Town and 2,200 miles from Buenos Aires. Amsterdam Island belongs to France and is 2,800 miles east of Cape Town and 1,900 miles from the Australian coast. These distances emphasise the vastness of the ocean area in the Southern Hemisphere. Nature appears to have been kindly disposed to the meteorologists of the Southern Hemisphere in so conveniently positioning these islands in mid-ocean, particularly in view of the relatively small number of ships on the Cape to Australia and Cape to South America routes.

The Recent Voyage of the *Discovery II*

By H. F. P. HERDMAN, D.Sc.
(National Institute of Oceanography)

The return of the *Discovery II* to Plymouth in December last ended a 20-month voyage of oceanographical survey. It was her first post-war voyage and also her first under the auspices of the National Institute of Oceanography, which was founded three years ago to do basic work in oceanography and also to continue much of the work of the former *Discovery* Committee. Most readers of *The Marine Observer* will be familiar with the area in which the greater part of the Committee's oceanographical work had been carried out before the war, and the main purpose of this voyage was to round off an oceanographical survey of the Southern Ocean begun many years ago. Our pre-war data contained a number of gaps, especially in winter, and the programme for this recent voyage was arranged, so far as possible, to cover most of these. The Indian Ocean sector was visited in winter and summer, the Australian sector in autumn and winter and the Pacific sector in spring and winter; and a winter cruise was made across the Atlantic sector. Much of the winter work was included in a circumpolar cruise made during the winter of 1951 between the months of June and September. This is only the second time in history that a winter circumpolar cruise has been made in the Antarctic—and each time it was made by the *Discovery II*. The earlier cruise was completed in 1932, but as that voyage started in a different part of the Southern Ocean, the various sectors were visited at a slightly different time of year, and the results do not overlap those now obtained.

The fact that the Southern Ocean is a continuous belt of deep water surrounding the Antarctic continent simplifies the system of ocean currents and the circulation of the water masses, and this relative simplicity of the water conditions makes it easier to study the large-scale physical, chemical and biological processes of marine life; it also allows us to make generalisations from fewer data than would be possible in other oceans. Another factor which tends to simplify physical conditions in the Southern Ocean is the relative freedom with which movement of the water masses can take place between this continuous belt of deep water and the various oceans to the north; there is, in fact, a definite and reasonably simple pattern discernible in the exchange of water at all depths between the Southern Ocean and the oceans to the north of it. One example of this is the well-marked boundary in the surface layers between Antarctic and sub-Antarctic water, known as the Antarctic Convergence. Much is already known about the average latitude and general trend of the Antarctic Convergence for all seasons, but until this last voyage, when the possession of a bathythermograph made such work much more practicable, no attempt had been made to examine the Convergence in detail.

As was only to be expected, the weather was poor when we commenced work in June, 1950, with a line of deep oceanographical stations, southward from the Equator, through the little-known Central Indian Ocean. Conditions had not improved when we continued this line to the ice-edge in August, and on the run from the ice (in 57°S, 95°E) to Melbourne in September gale again succeeded gale with monotonous regularity. The essential observations, however, were obtained, and showed that, so far as the southern part of the Indian Ocean was concerned, the pattern of the water circulation was related to that of the Southern Ocean in the way we expected.

The ship, after local work off the south-eastern coast of Australia, continued her deep-sea work with a line of stations across the Tasman Sea, between Sydney and Wellington. Some interesting results were obtained from these stations and showed that a parallel line to the south would be very desirable—if we could fit it in later. Many soundings were taken on this run, especially on the Lord Howe Ridge, and, after leaving Wellington for the spring cruise in the Pacific, the sounding programme was continued with a continuous record across the southern end of the Kermadec

Trench and out into oceanic depths beyond the Chatham Islands—a distance of over 500 miles. Further to the east we located an unexpected sea-mount in 45½°s, 157½°w, with a least recorded depth of 366 fm. and a height of 13,800 ft.

On reaching 150°w, in November, 1950, we turned south and began a line of deep stations to the ice. Conditions generally were good and we reached the latitude of 60° 46's before meeting the pack-ice, which was now showing signs of the break-up. The weather continued reasonably fine for the next week and we steamed west, on a zig-zag course, along the ice-edge before turning north for Dunedin. After a short stay here course was set for Macquarie Island, where we were to land mails, stores and personnel for the Australian Antarctic Research Expedition (A.N.A.R.E.) party there. On the way we again took a continuous sounding record, since there is considerable doubt about the topography of the bottom in this area, and it has been suggested that a ridge connects Macquarie with the island shelf of New Zealand. The evidence for this is flimsy, and although our soundings on this cruise did little to resolve the matter, it would appear from evidence obtained later—when we worked two lines of deep oceanographical stations in this area—that the most reasonable interpretation of the distribution of temperature, salinity and oxygen content in the deep and bottom water of the Tasman Sea is that almost certainly there must be a reasonably deep channel (i.e. over 1,500 fm. in depth) between Macquarie Island and the New Zealand Shelf.

On this cruise to Macquarie we were accompanied by two members of the staff of the Meteorological Physics Division of the Commonwealth Scientific and Industrial Research Organisation from Melbourne, and after leaving Macquarie we continued south for an intensive examination of the Antarctic Convergence. Detailed observations of a very sharp convergence produced very interesting results with regard to the discontinuity layers in the water, and equally interesting results were obtained by the meteorological physicists on air conditions between the mast-head and sea level. Unfortunately an attempt to follow the Convergence to the west was prevented by a sudden gale, and weather conditions remained stormy for the rest of that trip.

Continuing westwards from Melbourne, after local work in the Bight and a call at Fremantle, we reached 90°E again in mid-February and repeated this line of stations in summer. We had hoped to reach the Antarctic Continent on this cruise, but it was an exceptionally heavy ice year in the neighbourhood of the Davis Sea and we were stopped by heavy pack when 90 miles north of the land. Turning east, we tried to reach the Shackleton ice shelf, but were continually forced away to the north-east, and as we were unable to spend any more time here we returned to Sydney in March for a short refit.

In mid-May we left again for the winter circumpolar cruise to Fremantle, via Dunedin, the Falkland Islands, Simonstown, Durban, Kerguelen and Heard Island. A line of stations was worked across the southern part of the Tasman Sea and another from Dunedin to the ice-edge, in 65°s, 140°w. As mentioned earlier a first examination of the results of these lines indicates that the deep water circulation of the Tasman Sea appears to be partly bound up with the conditions prevailing to the east and south-east of New Zealand.

Conditions on the ice-edge were interesting. We had been steaming for some hours through what appeared to be oily patches—but were really masses of ice crystals in a calm sea—before reaching heavier ice, in the form of pancakes. We pushed on through these but could find no really clear-cut edge—the pancakes merely became larger, heavier and more closely packed as we moved south—and as it was obvious in the cold, still weather then prevailing that this new ice was thickening rapidly, we turned away to the north-east and open water. Similar ice conditions were observed later, in 80°w, south of South Georgia and east of Candlemas Island, in the South Sandwich group, and there can be little doubt that in mid-winter the ice-edge is generally as we found it, that is to say, there is no

clear-cut edge, but a progressive increase in size and thickness of the pancakes as one moves south. Stormy weather and a prevalence of south-westerly gales can, however, bring about a dispersal of much of the new ice and on certain occasions it may be possible to find heavier and older ice at the northern edge of the pack.

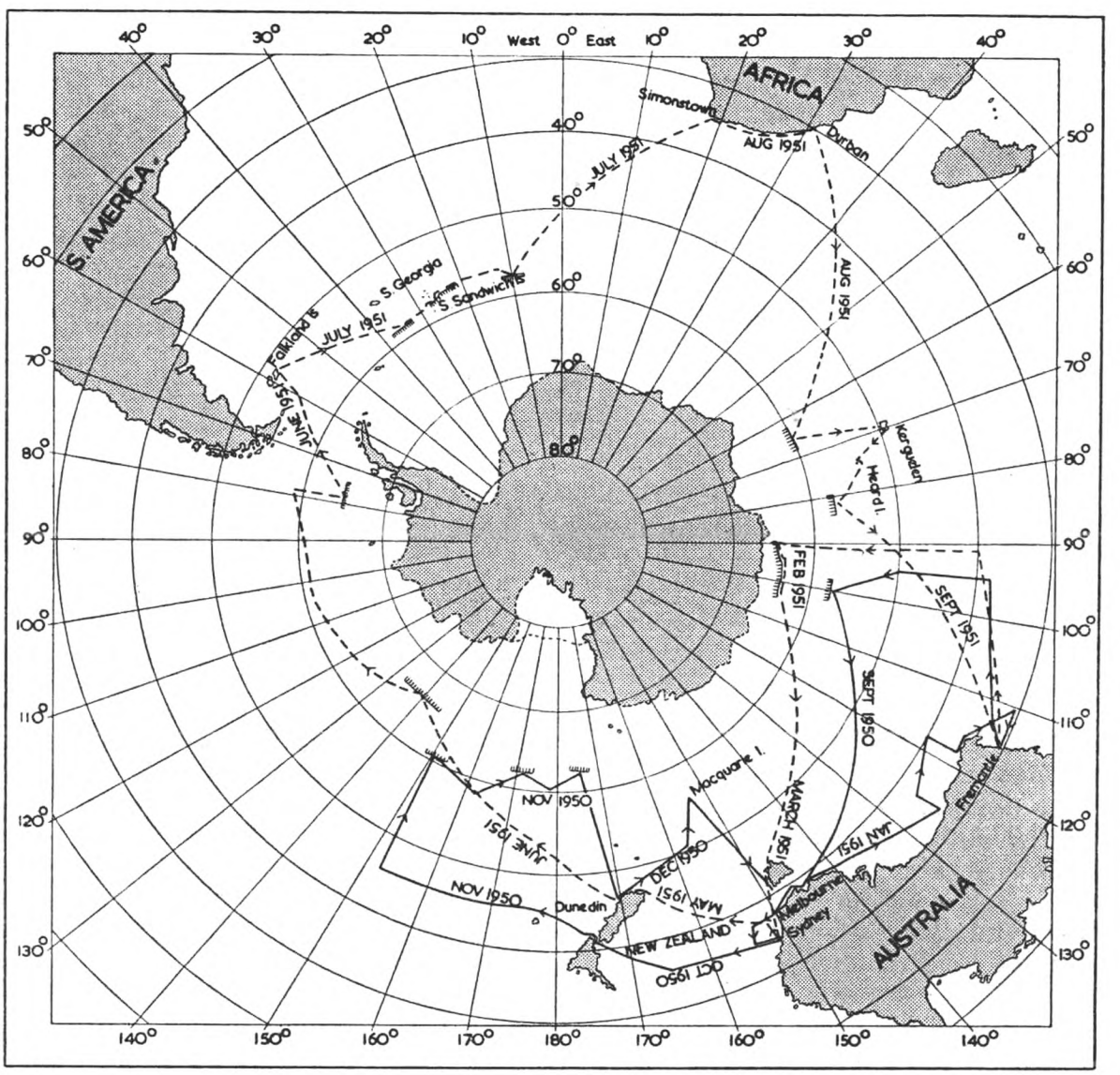


Chart showing the routes taken by R.R.S. *Discovery II* during her recent Antarctic voyages.

The circumpolar cruise was mainly without incident and all the lines of oceanographical stations planned were satisfactorily completed. Generally the weather was fairly good, though we had a period of boisterous conditions in the Pacific sector and a stormy run up from the ice to Port Stanley. The run across the Scotia Sea to the South Sandwich group was made in excellent weather, but east of that latitude we again met with strong westerly winds, often of gale force. The weather was poor in the neighbourhood of Kerguelen and at Heard Island, where we were to land mails and stores for the A.N.A.R.E. party there; our stay had of necessity to be short, since a gale was blowing directly into the anchorage. This, coupled with low visibility on account of snow, made us anxious to get to sea again.

When we left Fremantle finally, in October last year, we carried out some experiments with a Kullenberg piston corer and then repeated our line of stations up the Central Indian Ocean. The weather was good and we were able to obtain

observations at all stations, to within a short distance from the bottom. These results, in conjunction with our outward-bound line and our soundings, leads us to believe that the bottom topography of the Indian Ocean, in the northern part of this line (i.e. north of 15°S), may be vastly different from the present suggested topography. It may be that a ridge of considerable proportions, running in a east-west direction, prevents an exchange of bottom water between north and south.

Little further scientific field work was done on the way home, via Ceylon and the Suez Canal, but the echo-sounding routine was continued in oceanic waters and in the Eastern Mediterranean. An interesting sea-mount was found off Cape Guardafui, rising some 14,000 ft. above the bed of the ocean, with a least recorded depth of 249 fm., and some very interesting soundings were obtained south of Malta, across a submarine fault.

The material obtained on this voyage is in itself of considerable importance, but the consideration of the present results in relation to the many observations made in pre-war years will occupy us for some time. There can be little doubt that there is a close relationship between the Antarctic Convergence and the distribution of pack-ice, and it is very probable that the problem is also linked with the exchange of energy between ocean and atmosphere, a subject which is one of the most promising lines of marine physical investigation, and one which will undoubtedly improve our understanding of the Antarctic climate.

Editor's Note.

R.R.S. *Discovery II* was equipped as a Selected Ship before sailing from England in May, 1950, and throughout the period covered by Dr. Herdman's article kept a full meteorological log and sent radio reports.

In addition to the normal equipment, she was also supplied with balloons and hydrogen for checking the estimation of cloud heights. In general the weather prevented the extensive use of this aid, but from the few observations made it was seen that cloud heights below 1,500 ft. were usually underestimated whilst those above 1,500 ft. were usually overestimated.

Much useful meteorological information was extracted from the logbooks received from *Discovery II*, but much remains to be known about this little-known ocean before our knowledge is anywhere near adequate.

The Hurricane at Jamaica, August, 1951

The following notes on the severe hurricane experienced in Jamaica in August, 1951, have been received from Captain A. McColm of the S.S. *Jamaica Producer*.

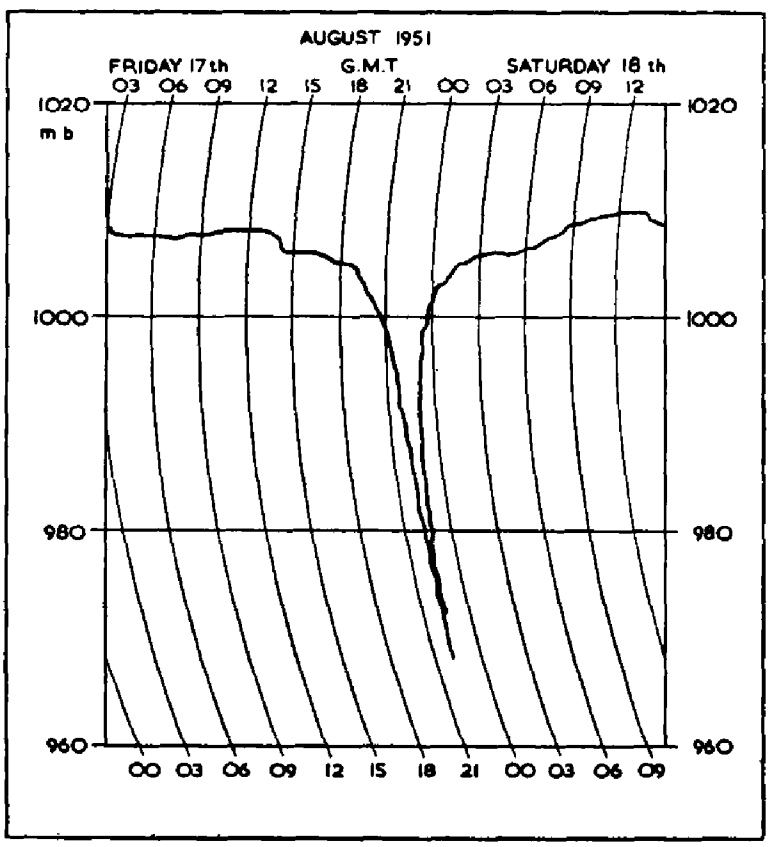
" The first indication that unusual weather was brewing was contained in a radio weather warning which stated that there was an area of low pressure to the eastward. This was on Tuesday, 14th August, while the ship was at sea bound for Kingston, Jamaica. She arrived on Wednesday 15th, and commenced discharging cargo.

" On Thursday, 16th August, a hurricane was reported south of Santo Domingo travelling west at 18 kt. At 1700 that day Captain McColm ordered steam to be raised and kept at one hour's notice. At midnight the barometer reading was 298·5 in. (1010·8 mb.), wind SW force 2, weather overcast, fine and clear. (*Note.* As the ship was in harbour the meteorological log was not being kept; barometer readings mentioned here are from the deck log, and refer to the Meteorological Office barometer corrected and converted to inch readings.)

" Cargo work proceeded during the night until 0320 on Friday 17th, when heavy rain put a stop to it. At 1000 the hurricane warning signal was hoisted at the Port Captain's office and ships were ordered to leave the wharf. All awnings were furled and everything made secure and at 1200 the ship was moved to the anchorage.

" Most of the day was nearly calm and oppressively hot until about 1600 when the sky became overcast and heavy rain squalls commenced. At 2115, after a period

of rather unusual quietness, the wind quite suddenly increased to hurricane force from the NE, with heavy driving rain which made visibility nil. At about 2200 the wind veered to east and increased, with visibility still zero. At about this time the barometer reached its lowest reading, 28·60 in. (968·5 mb.). The wind continued to veer and at 2240 was logged as SSE with a slight moderation in the wind force. By 2300 it was S'E, decreasing, and the visibility improving, while at midnight the worst was over; the barometer rising, the wind S and decreasing, but still about force 9. The gradual improvement continued throughout the night and at 0400 on Saturday the wind was logged as moderating rapidly, with frequent rain showers. At 0800 the wind was SE, moderate, barometer 29·86 in. (1011·1 mb.) and some



rain. By afternoon the weather was normal. The *Jamaica Producer* has on loan one of the open scale Meteorological Office barographs and the barogram for this period is attached to these notes. While in port the instrument had been set to local time (Zone+5). The centre of the hurricane was thought to have passed about 25 miles to the southward of Kingston Harbour.

" Frequent radio bulletins from the U.S. Weather Bureau gave excellent and accurate information. Aircraft had reported winds of over 100 kt., and the hurricane arrived as predicted. With several other ships in the harbour and dragging their anchors, it will be appreciated that the situation during the night was dangerous." C. H. W.

Milestone in Canadian Meteorology

The following is a report received from Mr. Andrew Thompson, Director of the Canadian Meteorological Service.

What might be called a minor milestone in Canadian meteorology was passed recently with the installation of the first Canadian-made, Canadian-designed marine barometer on an ocean-going ship. The ship was the Imperial Co. of Canada's S.S. *Imperial Toronto* and the installation was performed by Rube Hornstein, well-known meteorologist in the Maritimes, who is officer-in-charge of the Dominion Public Weather Office at Halifax. The basic design of the barometer was executed by Dr. J. Patterson, former controller of Canada's weather service, and was manufactured and calibrated in the weather service's own instrument shop.

Official weather observations are made by Selected Ships of all nations who ply the high seas, and about 30 Canadian merchant ships contribute weather reports as part of this world-wide programme.

Observing the weather at sea presents some peculiar technical problems, particularly in regard to measuring the atmospheric pressure, and the new Canadian barometer just installed in the S.S. *Imperial Toronto* is designed to overcome these problems. The instrument is mounted on gimbals to counteract the rolling of the ship, and has a constricted bore in the lower part of the mercury tube to minimise "pumping"—the violent oscillations of the mercury column due to the motion of the vessel. An adjustable scale, called the Gold Slide, is mounted on the new barometer, which does away with several tables of correction.

The Meteorological Service of Canada is extremely proud of the appearance of its new barometer and the ship's company of the S.S. *Imperial Toronto* were very pleased with the distinction of being the first to sail with this finest of all marine barometers.

SHIPS' RADIO WEATHER MESSAGES THROUGH U.S. GOVERNMENT SHORE STATIONS

Complaints have been made from time to time by radio officers in British Selected Ships that they experience difficulty in clearing weather messages by radio through U.S. Government shore stations. We have consulted Dr. Reichelderfer, Chief of the U.S. Weather Bureau, about this and his comments are broadly as follows:

"We agree that if U.S. Government shore stations could maintain watch on an additional frequency in the 8-megacycle band at the synoptic hours as has been suggested, it would be helpful to ships in overcoming some of the difficulties now encountered in clearing radio weather messages. The U.S. Coast Guard are, however, unable to do this because of existing personnel limitations at their shore stations. The suggestion will, however, be kept in mind and in the meantime there is no objection if British merchant ships clear their reports through U.S. commercial shore stations whenever they are unable to contact a U.S. Government radio station."

Dr. Reichelderfer goes on to say:

"We made a survey of radio reports received at Washington during the month of September from British Selected Ships. On several days during this period the number of reports cleared by these ships through U.S. Government shore stations was as much as 20 per cent of all messages originated by British Selected Ships. I will appreciate it if you will express my sincere thanks to the masters and observing officers of your Selected Ships for their co-operation in our radio reporting programme."

Book Reviews

Red Sea and Gulf of Aden. Oceanographic and Meteorological Data. Koninklijk Nederlands Meteorologisch Instituut. 23 in. × 17 in., pp. 26. Staatsdrukkerijen Uitgeverijbedrijf, 's-Gravenhage, 1949. Price, fl 10.

The contents of this atlas are:

1. Table of current drifts of 73 miles per day or over.
2. Monthly current and wind roses and vector mean winds and currents.
3. Mean monthly sea level pressures and the standard deviations.
4. Mean monthly air and sea-surface temperatures and the standard deviations for each.
5. Notes on tropical storms.
6. Percentage frequency of gales.
7. Percentage duration of precipitation.
8. Percentage duration of fog and " dust fog ".

All the text is given in both Dutch and English and the whole atlas is beautifully produced. There are small errors on page 26, in the penultimate line, where the figures should read " ½ to 1½ " in each column. The information on the charts is given for 1-degree squares and the number of observations is always included.

The agreement between the Dutch atlas and the British Indian Ocean Meteorological Atlas* must be regarded as generally most satisfactory, especially as the observations were made by ships of different nationalities over not identical periods. This agreement is partly due to the large number of observations available in this region, but also is a comment on the generally high standard of observing by the mariners of the two countries.

The greatest disagreement between the Dutch and British atlases is for the percentage frequency of gales, and this is because the Dutch have included winds of Beaufort force 8 or over, whereas the British have considered all winds of force 7 or over as gales for this purpose.

The Dutch have adopted standard deviations to represent the spread of temperature observations about the mean. This method of representation is of greater value to the marine climatologist from the scientific standpoint than is the British use of " 5-percentile " temperatures, but the latter values are clearly of much greater use to mariners and shipping companies. P. R. B.

Magnetic Compass Deviation and Correction. By W. Denne. 8½ in. × 5½ in. pp. xx+149. *Illus.* Brown, Son & Ferguson Ltd., Glasgow, 1951. 21s.

In former days when a keel was laid, plates and frames bolted in place and a ship built entirely in one position, the riveter's hammer would aid and abet her desire to turn herself into a gigantic magnet and the resolving of her magnetic field was a much less complex matter than it is today. Nowadays quite large structures may be prefabricated in another part of the yard, or even miles away, and bring their own fields with them to the stocks. There the use of electric welding with direct current may produce yet more fields, while the intermittent use of radar and electronic aids during the voyage has presented still another problem to the compass adjuster and to the shipmaster concerned with making a good course.

It is no longer politic, even if it ever was prudent, to leave it all to the compass adjuster at the beginning of the voyage, and Captain Denne in this book very properly charges the ship's officer with the duty of being on the alert and able to anticipate changes that may occur in the deviation, due either to limitations in the method of adjustment or circumstances outside the control of the compass adjuster. In support of this he quotes an instance from within our own experience when, in

*Monthly Meteorological Charts of the Indian Ocean (M.O. 519). Her Majesty's Stationery Office, London, 1949.

January, 1949, the *Weather Recorder* was struck by lightning while at sea. The maximum deviation on any heading had previously been $3\frac{1}{2}°$ but afterwards the deviations ranged from 4° to 31°. Frequent corrections were necessary as these deviations were found to be creeping back, and it was six months before the correctors were in approximately the same position as they were before the incident.

The author has obviously studied his subject thoroughly. As he says in the preface, the theoretical part of the book is based on the Admiralty publication *The Theory of the Deviations of the Magnetic Compass*, and his object has been to present the mathematical side of that apparently formidable publication in a simplified manner so that it can be understood by anyone with a knowledge of geometry, trigonometry and algebra. He tends to discourage the use of rules of thumb in compass work but to encourage the mathematical approach which alone can give a real understanding of this subject. The book is so arranged that the ship's officer can select chapters for his own use depending on the extent to which he intends to study the subject. Similarly the candidate for master can quite easily sort out the requirements of his syllabus, while the teacher, the compass adjuster and the candidate for extra master will find that the whole book concerns them.

The first seven chapters take us gently right through the steps necessary to an intelligent study of the compass in ships, namely, parallelogram and triangle of forces, trigonometrical ratios, general remarks on magnetism, fundamental facts, the earth's magnetism and magnetic measurements. The heart of the book is contained in Chapters VIII to XIV, which deal with the magnetism of the ship, the evaluation of the coefficients and the heeling error. The last three chapters are devoted to the analysis of deviations, the theory of the mechanical correction of the compass and finally the mechanical correction itself. There is an appendix with 18 worked examples of questions of the type which may be met with in the Ministry of Transport examinations.

The comprehensive nature of the contents together with the robustness of the paper and binding, a well-known feature of textbooks published by the house of Brown, Son & Ferguson, make this volume deserving of a place on the shelves of any officer who wishes to know his profession more closely than is necessary for the sole purpose of gaining a certificate. Those studying for certificates will certainly benefit from a study of its contents. L. B. P.

Personalities

RETIREMENT.—Captain B. B. Grant, R.D., R.N.R., recently retired from the Canadian Pacific service, his last command being the *Empress of France*.

Brian B. Grant was born at Bristol in 1891 and commenced his sea career as an apprentice with Elders and Fyffes Ltd. in the West Indies fruit trade, later serving in tramp steamers until he obtained his master's certificate. On the outbreak of the First World War he enlisted in the Army with the Gloucester Regiment, then later obtained a transfer to the Royal Naval Reserve as a sub-lieutenant, serving for the remainder of the war in armed merchant cruisers of the Tenth Cruiser Squadron, on patrol and convoy duties in northern waters.

After being demobilised he joined Canadian Pacific Steamships Ltd. in May, 1919, as third officer of the *Pretorian*, one of the Allan Line fleet acquired by the Canadian Pacific. After passing through the junior grades in various ships in March, 1930, he became chief officer of the cargo vessel *Beaverford*, then in March, 1931, he was appointed to the new *Empress of Britain* as second officer, and remained in that ship for eight-and-a-half years, finally obtaining promotion to staff captain in August, 1937, and he was serving in that capacity when mobilised for service with the Royal Naval Reserve on the outbreak of the Second World War.

He served as commodore of coastal convoys on the east coast of England, being based at Southend, and received promotion to Captain, R.N.R., in October, 1941, and Acting-Commodore nearly a year later. He was attached to the Commander-in-Chief Western Approaches, based at Plymouth, then Liverpool, being employed

as commodore of ocean convoys until the end of the war with Germany, when he was appointed to command H.M.S. *Glengyle*, as assault ship, in which he proceeded to the Far East, being present at the surrender of the Japanese fleet.

On completion of war service Captain Grant returned to the Canadian Pacific as master of the *Beaverdell*, the first of the company's post-war fleet of turbo-electric cargo liners. He then commanded the *Beavercove*, the *Empress of Australia* and finally, in January, 1949, the *Empress of France*.

Captain Grant has had a long career of service in ships observing for the Meteorological Office, our first record of his name was in 1921 when he was third officer of the *Corsican*. We wish him many years of health and happiness in his retirement at Gosforth, Newcastle-on-Tyne. M. C.

RETIREMENT.—CAPTAIN A. H. HUTTON, O.B.E., retired from the post of Marine Superintendent of the General Steam Navigation Company, Ltd., in February, 1952.

He first went to sea as a cadet in Devitt & Moore's full-rigged ship *Illawarra* and then served as an officer in the Clan Line and one or two other companies. In 1914 he was called up for service in the Royal Naval Reserve, and during that war was in the 10th Cruiser Squadron, the Dover Patrol (including the Zeebrugge raid) and in the Mediterranean.

He joined the General Steam Navigation Co. in 1920, as second officer, and was promoted to command in 1926. In 1929 he came ashore as Assistant Marine Superintendent and was made Marine Superintendent in 1935. He is a director of the New Medway Steam Packet Co., Ltd., a member of the Ramsgate Harbour Board, a Younger Brother of Trinity House, a member of the Honourable Company of Master Mariners, and an associate of the Institution of Naval Architects.

Captain Hutton was always most helpful in obtaining the co-operation of the captains and officers of the General Steam Navigation ships in voluntary meteorological observing. We wish him health and happiness in his retirement.

C. H. W.

RETIREMENT.—CAPTAIN H. ROBERTS, O.B.E., retired from the sea after more than 44 years afloat when the *Matina* berthed in Southampton on 28th September, 1951.

After serving most of his time in the Welsh schooners *Olwen*, *Sunbeam*, *Mary* and *Mary Orr*, Captain Roberts passed for second mate in 1912. After a short period in the Houston Line he joined Elders and Fyffes Ltd. as third officer of the *Patia* in January, 1914. After passing through the usual grades Captain Roberts was promoted to command of the *Nicoya* in 1926 and subsequently commanded many of his company's ships.

During the 1914–18 War he served as Lieutenant, R.N.R., mainly in " Q " boats, and it was from experience gained while serving with " Q " boat and submarine officers that Captain Roberts attributes the success of his encounter with a U-boat in the first week of the recent war. At the time Captain Roberts was in command of the *Mopan*, on her way home from Jamaica with a cargo of bananas, and was about 400 miles from Land's End when an enemy submarine surfaced and opened fire. Although being without armament of any kind, the attacking submarine was outmanœuvred and outdistanced by astute navigation and the co-operation of the engine-room staff, who attained a speed of 16½ knots from a normal 13½ knots. After about four hours the submarine was forced to abandon the chase, during which time the *Mopan* had been under fire from the forward gun of the U-boat, the only gun that could be used as Captain Roberts kept his ship end on to her attacker, and even this gun was used with difficulty on account of water breaking over her bows due to the speed necessary to keep *Mopan* in range.

Captain Roberts was awarded the O.B.E., the first master to be decorated in the 1939–45 War, the citation reading: " For great courage, resolution and skill in saving his unarmed ship when under continuous fire from an enemy submarine for over four hours ".

While in command of the *Matina* Captain Roberts received Excellent Awards for the last two years, 1950 and 1951.

We wish him health and happiness in his retirement. J. R. R.

RETIREMENT.—CAPTAIN G. S. STABLE, Commodore of the P. & O. S.N. Co., retired in December, 1951, after 43 years at sea, 39 of them in the P. & O. service.

Geoffrey Scott Stable first went to sea in sail in 1908 and served his apprenticeship in Messrs. Andrew Weir's four-masted barque *Cedarbank* and the barque *Sardhana*.

He joined the P. & O. Company in 1912 as fifth officer of the S.S. *Malta*. During the 1914–18 War he served in the Royal Naval Reserve in H.M.S. *Isonzo* (formerly the P. & O. liner *Isis*), and after the war was for a time in the P. & O. office in Malta. He returned to sea in 1920 as third officer of the *Khiva* and was second officer of the *Jeypore* at the end of that year. He was made chief officer in 1929 and after serving in several ships he was appointed to command of the *Lahore* in 1938.

In 1941 the *Lahore* was torpedoed and Captain Stable was appointed staff captain of the *Mooltan* and was in that ship at the Allied landings in North Africa in November, 1942. He subsequently commanded the *Corfu*, *Chitral* and *Canton*, which ship he commanded until he retired. We wish him health and happiness in his retirement.

His place as Commodore of the P. & O. Line is being taken by Captain H. S. Allan, R.D., R.N.R. C. H. W.

OBITUARY.—It is with regret that we record the death in December, 1951, of CAPTAIN SIR ARTHUR JAMES BAXTER, K.B.E., D.S.C., R.D., R.N.R., late Commodore of the Orient Line.

Captain Baxter first went to sea in 1904 and joined the Orient Line in 1913. He had a long and distinguished career afloat, both in the Merchant Navy and in service with the Royal Navy as an R.N.R. officer during both World Wars. He retired from the sea in 1949, and an account of his career appeared in the April, 1950, number of this journal. C. H. W.

OBITUARY.—We regret to record the death of CAPTAIN SIR ERNEST H. THORNTON, Kt., R.D., R.N.R. (Retd.), a former Commodore of the Union-Castle Line fleet.

Ernest Hugh Thornton was educated at Magdalen College School, Oxford, and went to sea in 1900 as an apprentice in the four-masted barque *Matterhorn*. From 1904 to 1906 he was in the S.S. *Vinebranch*, and then joined the Union-Castle Line as a fifth officer.

At the outbreak of the 1914–18 War he was undergoing training as a Lieutenant, R.N.R., in H.M.S. *Lion*, and he remained in that ship throughout the war under Admiral Sir David Beatty, being present at the battles of the Heligoland Bight, the Dogger Bank and Jutland.

He rejoined the Union-Castle Line in 1919, obtaining his first command in the *Hansa* in 1929 and subsequently commanding intermediate passenger ships until 1937, when he was appointed to the mail service.

His last ship was the *Capetown Castle*, of 27,000 tons, in which ship he served from January, 1939, to July, 1946. During this period he was in 1941 made Commodore of the Union-Castle fleet, and in June, 1944, received the honour of knighthood for meritorious war service afloat. He retired in 1947. Meteorological logs were received from a number of ships under his command, the first of which we have record being from the *Llangibby Castle* in 1937.

His death took place in November, 1951, at N'gong, near Nairobi, Kenya, at the age of 67. The writer had sailed with him in the Union-Castle Line and knew him for a first-rate seaman and a good shipmate.

Sir Ernest's brother, the late Captain E. J. Thornton, had also been the Commodore of a great steamship company, the P. & O. S.N. Co.

It is surely unusual for two brothers to attain this rank. C. H. W.

Southern Ice Reports

During the years 1950 and 1951

July, August and September—no reports received. Reports of ice for these months previous to 1950 will be found in *The Marine Observer*, Vol. XX, No. 149, page 180.

EPIDEMIOLOGICAL BULLETINS

A recent Admiralty Notice to Mariners mentions that the Epidemiological Bulletins, compiled by the World Health Organisation (W.H.O.), Geneva, are being broadcast for the benefit of Health Administrations and of shipping.

Happily, serious epidemics of plague and the like are not very common nowadays, but the issue of these bulletins is rather a good example of the useful work which an international organisation can do.

ERRATA

The Marine Observer, January, 1952 (Vol. XXII, No. 155):

(*a*) " Editorial ", page 3, line 26: " The last memorable change in the Master's and Mate's examinations " was in 1931, not 1932 as printed.

(*b*) "Forecasting for the D-day Landings", page 26, Fig. 7: Owing to the dots of the stippling interfering with the figures, the temperature of 55°F at Newcastle was reproduced to look like 25° on the map.

Notices to Marine Observers

Postal Arrangements

The quarterly numbers of *The Marine Observer* are published on the last Wednesdays of December, March, June and September.

The Marine Observer is addressed to the Captain, S.S./M.V. ....., c/o the owners, and captains are requested to make their own arrangements for forwarding.

Ship-owners, Marine Superintendents and all concerned in the despatch of mails to ships are asked to kindly facilitate the despatch and delivery of mail received at their offices from the Meteorological Office and "Air Publications and Forms Stores " to their ships abroad. Addressed to the captains of ships, this contains information required for the conduct of meteorological work at sea, and is most effective if received by the captains at the earliest possible date.

The Marine Observer

Captains of observing ships are requested to ensure that all officers who participate in the voluntary meteorological work carried out by the ship have access to *The Marine Observer*.

Ice Observation

Drifting ice, derelicts and other floating dangers to navigation are reported by all means of communication at the disposal of the master.

See Chapter 12, pages 96–98 of the *Marine Observer's Handbook*, Seventh Edition.

It is also desirable that more detailed information than can be given in a TTT wireless message should be available to the Meteorological Office for the purpose of research, and for Admiralty Charts and Sailing Directions.

Marine observers will greatly assist by noting the conditions of ice, either drifting or fast, in the pages provided at the end of the logbook (Form 911), or on Form 912, which may be supplied to the captain of any British ship on application to a Port Meteorological Officer or Merchant Navy Agent.

Observing ships using the Trans-North Atlantic tracks are requested to record not only when ice is encountered, but also when they have passed through the ice region during the ice season without encountering ice. In this case a " nil " report should be returned, since it is desirable as far as possible to determine when tracks have been clear of ice.

FLEET LIST (Great Britain)

VOLUNTARY OBSERVING SHIPS

The following is a list of British ships voluntarily co-operating with the Marine Branch of the Meteorological Office.

The names of the Captains, Observing Officers and Senior Radio Officers are given as ascertained from the last written returns received. The date of receipt of the last return received is given in the third column.

All returns received from observing ships will be acknowledged, direct to the ship, by the Marine Superintendent.

The Port Meteorological Officers and Merchant Navy Agents at the ports will make personal calls on the Captains and Observing Officers as opportunity offers, or on notification from the ship at any time when their services are desired.

Excellent awards are made at the end of each financial year. The names of the Captains, Principal Observing Officers and Senior Radio Officers gaining these awards are published in a special list in *The Marine Observer*.

It is requested that prior notification of changes of service, probable periods of lay-up, transfer of Captain, or other circumstances which may prevent the continuance of voluntary meteorological service at sea, may be made to the appropriate Port Meteorological Officer or Merchant Navy Agent.

Captains are requested to point out any errors or omissions which may occur in the list.

Selected Ships

Name of Vessel	Call Sign	Last Return Received	Captain	Observing Officers	Senior Radio Officer	Owners/Managers
Accra	GJSW	9.1.52	A. G. Baptiste	R. E. Liptrot, J. Chaplin, F. M. Howe	J. Stewart	Elder Dempster Lines, Ltd.
Afghanistan	GNYB	17.4.51	R. Connacher	J. Arthur, S. W. Jones, J. Salter	G. G. Miller	F. C. Strick & Co., Ltd.
Ajana	GKVY	2.2.52	F. W. Mould	R. Brewster, F. Stenhouse, D. G. Billing	J. D. Milton	Trinder Anderson & Co.
Ajax	GJXM	26.1.52	H. S. Wood	A. Railton, C. McKinnon, J. Dwyer	A. B. Martin	A. Holt & Co.
Akaroa	GMLP	8.1.52	J. W. Hart	A. E. Smith, P. M. Williams, P. G. Clifford	M. J. Sheehan	Shaw Savill & Albion Co., Ltd.
Alcantara	GLQR	4.12.51	H. D. Hooper	R. Turner, A. Heather, J. Markham	R. Hammond	Royal Mail Lines Ltd.
Alsatia	MABL		J. G. Bradley, R.D., R.N.R.	A. Bull, R. M. Ansan, F. Diggle, D. Rostorn	J. Hinds	Cunard Steamship Co., Ltd.
Amakura	MCPN	14.11.51	S. Armitage	K. Garrett, H. W. M. Treasurer, J. H. Donaldson	I. R. Davies	Booker Bros., McConnell & Co., Ltd.
Amersham	GNTQ	19.3.52	A. Spence	T. Brand, E. T. Ward, J. Frain	E. Ward	Thompson S.S. Co., Ltd.
Andes	GQCV	24.12.51	G. A. Bannister	W. Wheatley, G. Wright, J. Thornhill, M. L. Thomson	W. Smith	Royal Mail Lines, Ltd.
Andria	GDWM		W. B. Tanner, R.D., R.N.R.	P. J. R. Lawley, J. A. Davies, T. G. Morrish, H. Kelly	—. Hickey	Cunard Steamship Co., Ltd.
Apapa	MACE	19.3.52	W. Munt	F. Grayson, D. Thompson, W. M. Crossman, J. R. Smith	J. Hynes	Elder Dempster Lines, Ltd.
Arabia	GLKF	8.7.50	J. Chapman, R.D., R.N.R.	A. C. Caird, —. Parry-Williams, A. Boyce	T. Sandham	Cunard Steamship Co., Ltd.
Arabistan	GCKK	10.3.52	J. E. Cooke	D. Calvert, T. Dumont, A. Norris	G. Adamson	F. C. Strick & Co., Ltd.
Araby	GMZL	24.7.51	F. J. Swallow	C. J. S. Morris, K. Finlinson, —. Acason, M. G. Boyd	W. Comming	Royal Mail Lines, Ltd.
Arakaka	GDVN	1.10.51	A. A. Gerrard	K. W. Leadbetter, F. J. A. Woods, A. Harley	—. Fraser	Booker Bros., McConnell & Co., Ltd.
Arawa	GSMN	10.1.52	W. G. West	B. Hammond, F. F. Sangster, B. N. Hinderwell	P. W. Booth	Shaw, Savill & Albion Co., Ltd.
Argentina Star	GTKF	18.5.51	E. R. Pearce, O.B.E.	D. Sinclair, W. Sturrock, J. Parker	M. Sheahan	Blue Star Line, Ltd.
Argyll	GBWB	28.2.52	J. Dodds	T. R. Rowe, R. Muir, E. French	R. Greenhaugh	B. J. Sutherland & Co., Ltd.
Ariguani	GMBL	8.10.51	R. W. Lundy	W. N. Burns, —. Pulman, N. Abbott	A. N. Taylor	Elders & Fyffes, Ltd.
Armadale	GMCR	5.12.51	E. J. Ridout	W. L. Babbs, H. Coats, G. C. Elvidge	E. W. Harle	Trinder, Anderson & Co.

Name of Vessel	Call Sign	Last Return Received	Captain	Observing Officers	Senior Radio Officer	Owners/Managers
Arundel Castle	GCZL	11.2.52	D. D. Mackenzie	C. Tune, J. Harry	E. Pitt	Union Castle Mail S.S. Co., Ltd.
Ascania	GKNJ	1.1.52	A. MacKellar, R.D., R.N.R.	P. J. Mullen, P. Gadsden, A. G. Broster	H. Milligan	Cunard Steamship Co., Ltd.
Ashburton	GNJN	25.7.51	R. Willcocks	W. Stenhouse, R. Mattingley, H. McGill	J. Newlyn	Trinder Anderson & Co.
Asia	GLJV	18.12.51	N. A. F. Kingscote	P. Miller, A. H. West, T. C. Counsell	J. Marshall	Cunard Steamship Co., Ltd.
Assyria	GGKX	14.2.52	H. Morgan	D. S. Lomax, H. Dormer, H. Hurtley	B. A. Long	Cunard Steamship Co., Ltd.
Asturias	GLQS	7.11.51	B. C. Dodds, O.B.E.	G. B. Paynes, R. J. Luke, J. Merson	R. Farrell	Royal Mail Lines, Ltd.
Athelchief	GCRG	21.1.52	W. A. Meneight	L. Laidler, L. Park, P. Roberts	A. R. Smith	Tankers, Ltd.
Athenic	GBLS	26.2.52	B. Forbes-Moffatt	J. K. Mudd, J. G. Beck, T. J. Whiston	R. Knight	Shaw, Savill & Albion Co., Ltd.
Athlone Castle	GYTK	16.4.52	C. C. Page	F. E. Harrold, J. H. Lowe, D. G. Webster	J. H. Summers	Union Castle Mail S.S. Co., Ltd.
Aureol	GMGJ		J. J. Smith	S. Garside, A. Moore, G. Read	R. Barrett	Elder Dempster Lines, Ltd.
Auricula	GKPV	25.3.52	A. Thompson	R. L. Wood, M. L. de Lacroix, N. Cournow	H. D. Bray	Anglo-Saxon Petroleum Co., Ltd.
Australia Star	GYCS	17.3.52	R. White	G. T. King, H. Windle, J. Hutton, R. Middleton	N. Aldersley	Blue Star Line, Ltd.
Australind	GJKF	19.3.52	E. L. Ridout	F. W. Wray, D. Giles, —. Smith	R. Brown	Trinder, Anderson & Co.
Avistone	GBSV	25.2.52	T. W. Cromarty	S. T. Burt, J. Logie, J. Gardiner	L. R. Bradley	Purvis Shipping Co., Ltd.
Avondene	MAWG	11.2.52	F. Moorcraft	D. G. Powell, E. T. Milford	C. Cowen	Dene Shipping Co., Ltd.
Balaena	GLDG		P. Virik	—. Christoffersen, —. Bentzen, A. Andersen		United Whalers, Ltd.
Balantia	GBNM	24.12.51	H. Davies	J. H. Evans, W. A. Tresidder, F. Frizell	O. Kelly	Royal Mail Lines, Ltd.
Baron Elphinstone	GCCD	11.2.52	T. Scott	W. H. White, J. S. Heptinstall, J. Rennie, J. Budka	W. Anderson	H. Hogarth & Sons
Baron Fairlie	GLCY	2.4.52	T. R. Reid	J. E. Gordon, T. H. MacDonald, D. Dickson	H. MacGowan	H. Hogarth & Sons
Baron Maclay	GKXW	12.9.51	J. Reid	S. Firmin, E. Watson, A. Hardie	R. I. Podmore	H. Hogarth & Sons
Bassano	GNXK	28.12.50	F. Briggs	D. Sladdom, F. Smith, S. Wilkinson	G. Howden	Ellerman's Wilson Line, Ltd.
Beaverburn	MAGB	28.7.51	R. A. Leicester, O.B.E.	S. Fieldhouse, T. F. Hercus, R. J. Stewart	J. B. Smith	Canadian Pacific S.S., Ltd.
Beavercove	GNLX	22.2.51	J. Soame	J. H. Griffen, R. A. Jones, A. H. R. Peace	A. R. Porter	Canadian Pacific S.S., Ltd.
Beaverdell	GBBS	26.3.52	W. R. Thorburn	J. E. Morris, R. W. Savage, M. H. Scott	M. J. Sheehan	Canadian Pacific S.S., Ltd.
Beaverford	MQJG	8.7.50	L. C. Barry, M.B.E.	J. Gallagher, J. A. Edwards, D. Wallace	T. Ainsworth	Canadian Pacific S.S., Ltd.
Beaverglen	GBCP	1.3.51	N. C. H. Scallon, R.D., Cdr., R.N.R.	R. Kennedy, R. Savage, P. P. Ainsworth	R. J. Cummings	Canadian Pacific S.S. Ltd.
Beaverlake	GBCQ	10.8.51	N. C. H. Scallon, R.D., Cdr., R.N.R.	T. Sargent, Lt.-Cdr., R.N., Retd., —. Surtees, J. Richardson	A. E. S. Thompson	Canadian Pacific S.S., Ltd.
Beckenham	GCGK	13.9.51	T. V. Cameron	J. Collister		Watts, Watts & Co., Ltd.
Bellerophon	GGCM	16.4.52	H. C. Large	—. Eynnon, —. Davies, S. B. Gilliat, —. Holmes	—. Wilson	Alfred Holt and Co., Ltd.
Benarty	GCZZ	15.4.52	T. Sutherland	A. King, B. Stark, L. Chandler, J. Peyton-Bruhl	R. Dixon	W. Thomson & Co.
Bendoran	GCJN	28.11.50	A. Plenderleith	W. Niven, G. Speirs, R. Dick	J. Kemp	W. Thomson & Co.
Bennevis	MAGG	27.11.51	R. L. Chalmers	A. McKenzie, A. Hall	F. G. Hayes	W. Thomson & Co.
Benvannoch	GCDZ	26.1.52	A. M. Robertson	G. Reid, A. McLean, N. J. Mackie	E. Carruthers	W. Thomson & Co.
Benwyvis	MYPW	23.2.52	K. Hardie	W. W. Creber, M. Mathie, —. Syme	D. Milne	W. Thomson & Co.
Biscoe	GDCW	26.9.51	W. Orrell	C. G. Stiff, O. McCurdy, A. Wilkinson, J. Beal	J. Harrison	Hector Tankers, Ltd.
Boynton Wyke	GBZV		G. Glixby			West Dock Steam Fishing Co., Ltd.
Bransfield	GDRK		F. Gjertsen			United Whalers, Ltd.
Brasil Star	GTLF	15.11.50	G. E. Barnard	D. Thawley, D. M. McPhail, E. A. Davies, R. G. Taylor	T. Murdoch	Blue Star Line, Ltd.

Bravo	GLDZ	19.3.52	H. Hill	T. F. Connor, J. Marrow, S. Smith	R. Newton	Ellerman's Wilson Line, Ltd.
Brisbane Star	GZCJ	21.1.52	S. Foulkes	J. M. Cree, E. J. T. Boome, D. N. Murray	A. R. G. Murray	Blue Star Line, Ltd.
Bristol City	GUAY	17.12.51	A. L. Webb, O.B.E.	D. M. Wilton, W. H. Stoodley, R. L. Whitman	A. V. Chappel	Charles Hill & Sons
Britannic	GDXF	26.1.52	R. Sell, R.D., R.N.R.	—. Blackman, G. Hunt, M. Dodds	J. R. S. Kidson	Cunard Steamship Co., Ltd.
British Colonel	GFDB	7.3.51	W. L. Pugh	B. R. Potter, P. Taylor, G. Irving		British Tanker Co., Ltd.
British Endeavour	GFCN	23.4.52	J. R. Georgeson	M. D. Perry, D. M. Campbell, G. W. Reeve	H. Thompson	British Tanker Co., Ltd.
British Endurance	MLZM	9.1.52	R. T. C. Wright	A. Woodcock, S. T. Robinson, J. H. Armstrong	H. W. Barker	British Tanker Co., Ltd.
British Escort	GCRB	6.12.51	L. V. Potts	K. Curtis, J. Brown	R. Read	British Tanker Co., Ltd.
British Lancer	MAGS	9.1.52	J. H. Wilson	J. M. Sayers, W. V. Frost, M. Hall	V. Rowe	British Tanker Co., Ltd.
British Marquis	GWVL	7.8.51	W. C. Wall	D. Tinson, J. Clarke, N. Rutherford	A. G. Martin	British Tanker Co., Ltd.
British Patience	GUFF	21.4.52	S. Bruce	T. Beresford, A. C. Bramble, R. Sutherland	J. Unstead	British Tanker Co., Ltd.
British Piper	GDNN	24.7.51	S. L. Mea	J. C. Irvine, —. Twist, J. Taylor	K. Miller	British Tanker Co., Ltd.
British Power	GZGG	15.10.48	K. M. Mitchell	A. Fraser, P. F. Mason, E. C. Ford	F. G. Rimmington	British Tanker Co., Ltd.
British Resource	GFCD	27.11.51	F. W. Walton	J. O'Kane, G. M. McLead, D. Ritchie	P. E. Rowe	British Tanker Co., Ltd.
British Statesman	GJNR	16.8.51	E. Hornby	N. Griffiths, C. Hindness, I. F. Mackay, R. Morrison	G. O'Brien	British Tanker Co., Ltd.
British Swordfish	GCQV	14.2.52	L. G. Tanner	A. Cartwright, D. Jeffers, T. J. Fitzgerald	T. A. O'Connor	British Tanker Co., Ltd.
Brittany	GMZS	16.4.52	G. M. Fletcher	C. D. Ratcliff, R. J. Bland, A. Jewers	—. Evans	Royal Mail Lines, Ltd.
Brockleymoor	GDWP	10.3.52	D. J. Jones	R. W. Webb, A. H. Brown, C. Wales	C. Gamwell	Walter Runciman & Co., Ltd.
Byron	GNFL	26.7.50	J. Byrne	J. Munden, N. F. Fair, T. Flack	J. Wright	Lamport & Holt Line, Ltd.
Cairnavon	GPJN	17.4.52	J. W. Scott	C. Sutherland, G. H. Percy, G. W. Luke	W. P. Greaves	Cairns, Noble & Co.
Cairnesk	GMKR	12.12.51	J. Hogg	W. Gordon, W. Wallace	E. Johnston	Cairns, Noble & Co.
Cairnvalona	GQKM	5.9.50	G. R. Novell	J. Lobban, J. Potter, D. M. Aitchison	T. W. Lawson	Cairns, Noble & Co.
Caledonia	GCKR	24.3.52	D. Blair	J. McDade, D. Lamont, J. Dunnipace	S. J. D. Taylor	Anchor Line, Ltd.
Cameronia	GDXS	28.2.52	A. C. Johnson	A. Campbell, W. Stockley, P. B. Young, J. Ward	D. Thomson	Anchor Line, Ltd.
Canton	GDDT	3.12.51	E. R. Bodley, D.S.O.	G. B. Thom, D. Babelay, J. M. Rogers	M. J. Murphy	P. & O. Steam Navigation Co.
Cape Grafton	MAIF					Lyle Shipping Co., Ltd.
Cape St. Mary		17.12.51	J. A. Robson			West African Fisheries Research Institute
Capetown Castle	GKGM	17.3.52	H. A. Deller	M. W. Harrison, J. S. Taylor, A. H. Thurgood	H. Williams	Union Castle Mail S.S. Co., Ltd.
Captain Cook	GLBX	21.12.50	J. Cook	J. Hunter, N. Dalziel, A. McLean		Donaldson Bros. & Black, Ltd.
Carnarvon Castle	GJSL	4.3.52	J. F. Oakley	G. R. W. Archer, C. R. Grove, P. Truman	H. G. Liggins	Union Castle Mail S.S. Co., Ltd.
Caronia	GYKS	8.11.51	R. G. Thelwell, O.B.E., Cmde., R.D., R.N.R.	I. Brice, N. McAllister, J. A. P. Matthews	G. Parsons	Cunard Steamship Co., Ltd.
Carthage	GRNX	29.3.52	R. G. Freeman	D. Parsons, T. Smith, B. B. Jones, A. W. Pickering	—. O'Leary	P. & O. Steam Navigation Co.
Caslon	MCJR	6.3.51	J. Lungley	J. I. Aitken, L. Burton, G. Haleman	C. Cornish	Runciman (London), Ltd.
Cavina	GKFV	26.3.52	T. H. Bull	G. Wallace, H. Beyer	E. Loft	Elders & Fyffes, Ltd.
Caxton	GCDX	26.1.52	J. Wilson	E. Frazer, J. F. Thompson, S. Reid	A. Austin	Runciman (London), Ltd.
Ceramic	GFIM	31.3.52	H. C. Smith	D. Adams, R. Frisby, T. de M. Ogier, G. Perry	H. V. Littlecott	Shaw, Savill & Albion Co., Ltd.
Chantala	GQMR		H. F. Collinson			British India Steam Nav. Co., Ltd.
Chepman	GFVR		J. M. Cherry	A. King		Runciman (London), Ltd.
Cheshire	GLXV	26.1.52	P. H. Potter	J. Hughes, J. R. Longrigge, R. T. Stoneley	C. Bayer	Bibby Bros. & Co.
Chindwara	GFRT	11.2.52	B. A. Rogers, D.S.C., R.D., Cdr., R.N.R.	F. Bell, B. Brooking, —. Perry, —. Feltham	R. C. Law	British India Steam Nav. Co., Ltd.
Chitral	GLKN	17.1.52	J. C. W. Last	—. Ady, —. Beaumont, J. Crone	L. D. Waterhouse	P. & O. Steam Navigation Co.
Cilicia	GDGL	21.4.52	J. L. Gibson, O.B.E.	D. Lamont, G. Ramage, J. Barclay, W. McWalters	F. Alcock	Anchor Line, Ltd.

Name of Vessel	Call Sign	Last Return Received	Captain	Observing Officers	Senior Radio Officer	Owners/Managers
Cingalese Prince ..	GFRC	31.7.51	J. D. Fraser	R. Murphy, R. A. Coombes, H. E. Jennings, K. Slapp, J. W. Baston ..	S. A. Rowlinson ..	Prince Line, Ltd.
City of Barcelona ..	GTKR	17.11.51	N. Groundwater	K. Graham, F. Arnold, W. James ..	J. A. Duignan ..	Ellerman Lines, Ltd.
City of Bristol ..	GCPN	17.3.52	W. Nimmo	J. Tattersall, O. Henderson, J. D. Baillie	T. Gaffney	Ellerman Lines, Ltd.
City of Calcutta ..	GLYX	15.11.51	M. L. Hernan, M.B.E. ..	D. Wardlaw, D. L. Kinley, B. Ramage	R. W. Cole	Ellerman Lines, Ltd.
City of Cape Town ..	GBBQ	7.7.51	W. R. Pinchbeck	W. J. Lee, M. B. Perry, D. R. Townson	A. L. Pews	Ellerman Lines, Ltd.
City of Carlisle ..	GBJK	22.11.51	W. A. Hannah, O.B.E. ..	R. A. Jones, J. Terris, D. A. Williams, W. McMillan	F. Dobbie	Ellerman Lines, Ltd.
City of Chester ..	MAHN	22.11.51	R. W. Crome	N. Paskin, A. A. Ramsden, J. Parsons ..	A. R. Childe ..	Ellerman Lines, Ltd.
City of Delhi ..	GLBW	7.2.52	J. Drummond	D. J. Curson, T. W. Pierce, J. A. G. Cuthill	J. Macgillivray ..	Ellerman Lines, Ltd.
City of Derby ..	GFWC	13.6.51	G. J. Law, O.B.E. ..	P. Turner, —. Clark, G. W. White ..	—. Dean	Ellerman Lines, Ltd.
City of Dieppe ..	GSVQ	15.12.51	E. G. Chapman	T. Rigg, M. D. Langran, R. Thubron ..	D. C. Clayton ..	Ellerman Lines, Ltd.
City of Durham ..	GBJM	9.7.51	H. G. Williams, O.B.E. ..	N. F. Ayers, D. S. Taylor, A. I. Crossland, J. Cowper	H. Wilson	Ellerman Lines, Ltd.
City of Evansville ..	GJNF	21.1.52	A. M. Westlake	C. J. Heywood, K. Jones, W. F. Cannell	R. P. Redwood ..	Ellerman Lines, Ltd.
City of Johannesburg	GBKW	31.12.51	W. H. Matheson, O.B.E. ..	D. A. McKinnon, R. D. May, J. A. Cucksey	A. R. Henderson ..	Ellerman Lines, Ltd.
City of Khartoum ..	GBZC	25.10.51	J. A. Kinley	B. Walker, I. McDermid, T. R. Phinn, D. W. Asquith	A. Twistleton ..	Ellerman Lines, Ltd.
City of Lille	GSLN	25.9.51	W. A. Owen	W. R. Strachan, R. M. Bellhourse, G. H. Trevitt	C. Pickles	Ellerman Lines, Ltd.
City of Lyons ..	GMCN	11.2.52	C. G. Griffiths	P. Skelton, R. G. Lewis, E. Buckley ..	G. Hilton	Ellerman Lines, Ltd.
City of New York ..	GLYQ	16.4.52	S. L. Hoare, O.B.E. ..	J. L. Blanch, J. Lane, W. Tooley ..	D. Douglas	Hall Line, Ltd.
City of Paris ..	GFQM	9.4.52	H. Percival, O.B.E., R.D., Cmde., R.N.R.	E. Orr, P. Faulkner, W. Dick, K. Matheson	B. J. Holyoake ..	Ellerman Lines, Ltd.
City of Pretoria ..	GBLN	18.6.51	E. G. Freeman	J. A. Buchanan, C. Cradduck, M. McDonald	K. G. Arthur ..	Ellerman & Bucknall S.S. Co., Ltd.
City of Swansea ..	GBZT	21.4.52	F. J. H. T. Vizer	Lt.-Cdr. F. C. O'Neil, C. J. Appleton, A. K. Earl, D. Mathias	L. D. Beatty ..	Ellerman Lines, Ltd.
City of Sydney ..	GSFM	24.8.49	H. Johnson	B. Walker, J. Blanch, F. E. Cooper ..	H. D. Smythe ..	Ellerman Lines, Ltd.
City of Windsor ..	GJYR	21.12.51	T. L. Vaughan	N. J. Trickett, H. Lewis, T. Kerr ..	J. Huyton	Ellerman & Bucknall S.S. Co., Ltd.
Clan Brodie	GKPD	17.11.51	B. Vernon-Browne ..	J. L. Jones, C. J. Abbott, A. B. Davidson	—. McKelvie ..	Cayzer Irvine Co., Ltd.
Clan Buchanan ..	GKNM	28.7.51	J. Forster	B. Edwards, E. Cox, J. Beatock	W. Harper	Cayzer Irvine Co., Ltd.
Clan Campbell ..	GDZK	4.3.52	H. C. Simpson	R. Greene, A. Mair, —. Luborsky ..	R. F. Cole	Cayzer Irvine Co., Ltd.
Clan Chattan ..	GFBX	30.1.52	J. McCrone	W. S. Clarke, N. Wallace, J. P. David ..	E. J. Shillabeer ..	Cayzer Irvine Co., Ltd.
Clan Chisholm ..	GFBY	19.3.52	R. B. Linsley	C. A. Thomas, D. R. Godfrey, P. Macniven	H. G. P. Macnamara	Cayzer Irvine Co., Ltd.
Clan Davidson ..	MAWU	25.2.52	G. A. Watkinson	D. S. Williams, J. Molyneux, P. C. W. Hoblyn	J. E. Appleton ..	Cayzer Irvine Co., Ltd.
Clan Forbes	GPGB	9.8.51	W. R. Woodriffe	H. I. S. White, S. M. Grant, E. Chase ..	W. G. Peddie ..	Cayzer Irvine Co., Ltd.
Clan Macaulay ..	GZCS	12.7.49	A. G. Storkey	T. R. Parsons, S. K. Young, R. MacIntyre	W. H. Saville ..	Cayzer Irvine Co., Ltd.
Clan MacDonald ..	GCPG	18.1.52	A. Hogg	A. M. Banks, J. W. MacDonald, I. Connolly, T. Hunter	G. Martyn	Cayzer Irvine Co., Ltd.
Clan MacDougall ..	GFBQ	28.2.52	P. MacMillan	A. Elston, G. R. Thomas	C. E. C. Crew ..	Cayzer Irvine Co., Ltd.
Clan Mackinnon ..	GKLX	15.4.52	S. R. J. Woods, D.S.C., R.D., Cdr., R.N.R. ..	M. J. Skillington, F. G. King, R. T. W. Davies	J. D. Brosman ..	Cayzer Irvine Co., Ltd.
Clan Maclaren ..	GSSC	17.3.52	J. C. Scott	G. Forster, A. S. W. Grant, L. Pitts ..	R. Moore	Cayzer Irvine Co., Ltd.
Clan MacNair ..	GFNK	21.4.52	J. P. Dunphy	R. Shattock, W. H. S. Dilks, E. E. Coote	W. Madden	Cayzer Irvine Co., Ltd.

Clan MacNeil	GFWP	15.4.52	J. West	R. C. Pearce, E. Taylor, D. A. Thomas	J. Lamb	Cayzer Irvine Co., Ltd.
Clan Macrae	MAHP	9.4.52	E. Coulthart	I. A. Williams, D. A. Cobham, R. S. Scooling, W. Rickards	D. C. Phillips	Cayzer Irvine Co., Ltd.
Clan Mactavish	GUBB	14.11.50	E. Gough	P. L. Flateau, J. L. Easton, C. C. Atkinson	W. A. Ellmers	Cayzer Irvine Co., Ltd.
Clan Shaw	GBYW	24.10.51	R. P. Galer, C.B.E., R.D., Capt., R.N.R.	T. L. Kirby, A. M. Kennedy, P. Dall, J. Davidson	G. H. Hudd	Cayzer Irvine Co., Ltd.
Clan Sutherland	GFWZ	26.1.52	H. J. Anchor, O.B.E., A.D.C., R.D., R.N.R.	L. W. Gibbins, N. F. Wray-Cook, J. P. Hulton, J. Lyons	W. Gay	Cayzer Irvine Co., Ltd.
Clan Urquhart	GFBK	19.5.51	T. A. Inman, O.B.E.	L. S. Jones, R. A. Escolme, J. MacDonald	A. I. MacIntyre	Cayzer Irvine Co., Ltd.
Clearpool	MAHQ	17.3.52	G. R. Cobb	E. M. Steward, J. B. Forrest, K. E. Ward	A. M. Morris	Sir R. Ropner & Co., Ltd.
Clydebank	GKLM	3.12.51	P. D. MacFarlane	H. K. Stevens, C. V. Sawyer, A. H. Whitelaw	G. Murphy	Andrew Weir & Co., Ltd.
Columbia Star	GQGT	8.4.52	F. Hambridge	J. W. Owen, M. K. Drummond, H. Dyer	T. Lynch	Blue Star Line, Ltd.
Comliebank	GKLJ	6.2.51	J. Townsley	J. Donald, W. Ellarly, J. P. Edminson	R. Bodeman	Andrew Weir & Co., Ltd.
Condesa	MAHU	21.12.51	H. Heal	R. Tinmouth, N. H. England, T. McNamara	K. Thomas	Furness-Houlder Argentine Lines, Ltd.
Consuelo	GCGQ	12.9.51	H. Greenhill	J. Butler, W. Skinner, W. Tadman	D. Withers	Ellerman's Wilson Line, Ltd.
Corfu	GRNW	21.4.52	E. F. Ferraby	D. J. Knight, R. Elenor, P. Black	J. T. Macdonald	P. & O. Steam Navigation Co.
Corinthic	GZYL	11.2.52	A. C. Jones	G. Kaye, I. K. McIntosh	G. Richards	Shaw, Savill & Albion Co., Ltd.
Corrales	GSJL	14.1.52	W. J. Dodd	E. Whitehouse, G. Hayward, G. Gannicliffe, K. Leslie	M. Herd	Elders & Fyffes, Ltd.
Corrientes	GFPT	26.2.52	K. McLeod	A. C. Henderson, H. Leitch, J. H. Stark	W. S. Vaughan	Donaldson Bros. & Black, Ltd.
Coulgorm	MAHZ	21.3.51	G. Robison	C. Hardy, A. Jones, J. Buchanan	J. Crowley	Lambert Bros., Ltd.
Craftsman	GPZT	7.9.51	T. B. Littlechild	A. K. Jones, W. E. Williams, I. C. Colquhoun	A. Oates	T. & J. Harrison
Crofter	MNGX		S. Diamond	W. T. Ellis, J. W. Cubbin, W. Tinkler		T. & J. Harrison
Cumberland	GPPY	18.12.51	J. S. Oxnard	B. Hewitt, T. P. E. Hughes, W. E. A. Sewell	T. Laing	Federal Steam Nav. Co., Ltd.
Cuthbert	GFNW	23.2.52	F. H. Good, D.S.C.	J. Evans, —. Moore, W. Thatcher	C. Francis	Booth S.S. Co., Ltd.
Cuzco	GKPF	1.10.51	R. D. S. Eckford	A. Jestico, W. Johnston, G. Pattison	F. Murrant	Pacific Steam Nav. Co., Ltd.
Daleby	MFBV	5.11.51	J. Kenny	E. A. Snaith, E. J. Middleton, N. A. H. Oates, E. H. Williams	M. Carney	Ropner Shipping Co., Ltd.
Dallas City	GCLS	17.3.52	D. W. Boutcher	R. Duggan, W. Cross, C. McClusky	V. J. Warton	Sir William Reardon Smith & Sons, Ltd.
Darro	MAID	1.1.52	T. Powell	K. R. Jones, W. A. Kennedy, J. M. Jones, D. Thomas	J. Heeney	Royal Mail Lines, Ltd.
Debrett	GRPR	18.10.50	W. J. M. Ankers	W. A. Ansdell, R. J. Garcia, R. M. Dunning	J. Brown	Lamport & Holt Line, Ltd.
Deerpool	GKDY	21.3.52	C. H. Churchill	J. W. Tinmouth, A. Dekonski, R. A. Vans, E. M. Stewart	A. Owen	Sir R. Ropner & Co., Ltd.
Defoe	GNWF	9.1.52	W. C. Blake	D. Cordova, H. Smith, J. G. Roberts	W. Dowds	Lamport & Holt Line, Ltd.
Delane	MMNW	15.4.52	—. Jermain	K. Kolynski, M. T. McNeil, T. G. Jones	W. H. Miller	Lamport & Holt Line, Ltd.
Delilian	GJSQ	5.2.52	J. S. MacMillan	R. H. S. Anderson, S. P. Ewing, J. Ross	W. J. Read	Donaldson Bros. & Black, Ltd.
Delius	GZSY	25.1.52	A. W. Mitchell	J. Spooner, D. S. Sapp, T. Owen	D. Powell	Lamport & Holt Line, Ltd.
Denbighshire	GQGW	19.9.51	J. Simpson	J. Jackson, W. Solley, A. Lewis	H. Heapy	Glen Line, Ltd.
Derryclare	GCKN	14.3.51	N. Bellwood	D. S. Kingsland, A. Monaghan	E. W. Divers	McCowen & Gross, Ltd.
Deseado	MAIH	6.3.52	H. E. Sang	J. Holt	I. S. Humphrey	Royal Mail Lines, Ltd.
Devis	GFKT	26.2.52	W. Gillespie	R. Garcia, W. J. Neill, D. B. Smith	—. Prior	Lamport & Holt Line, Ltd.
Devon	GDRF	24.3.52	A. Hocken	J. Weston, B. Whybrow, J. Crewdson, J. Campbell, N. Collett	J. Tomlinson	Federal Steam Nav. Co., Ltd.
Devonshire	GTTV	17.11.51	A. Beharrel	J. W. MacKinlay, R. G. Lovegrove, P. J. W. Crossley	G. Talbot	Bibby Bros. & Co.
Dilwara	GYQV	22.1.52	F. L. Sampson, D.S.C.	R. B. Coates, H. B. Gray, E. C. Plowman	S. J. Taylor, M.B.E.	British India Steam Nav. Co., Ltd.
Dominion Monarch	GRGG	18.4.52	D. Aitchison	D. E. Aberdeen, R. J. Theakstone, T. Brodie	F. Hartford	Shaw, Savill & Albion Co., Ltd.
Dorelian	GTJL	22.12.51	D. MacQueen	W. H. Squair, A. J. Dougall, J. Baillie	T. W. Moody	Donaldson Bros. & Black, Ltd.

Name of Vessel	Call Sign	Last Return Received	Captain	Observing Officers	Senior Radio Officer	Owners/Managers
Dorset	GZFQ	1.10.51	A. E. Williams	E. J. Newling, J. Hollier, M. Smith, W. Laidlaw	D. J. Charters	Federal Steam Nav. Co., Ltd.
Drina	MAIL	22.11.51	D. R. Miller	J. Fox, M. Perrins, A. F. Nottage	A. Humphries	Royal Mail Lines, Ltd.
Dryden	MQFT	10.3.52	D. C. Roberts	K. Quirk, D. S. Leicester, B. H. Coupe, K. Maquire	B. Thompson	Lamport & Holt Line, Ltd.
Duke of Athens	GMYS	15.9.51	J. G. Lomas, A.I.N.A.	T. Owen, N. Beattie, T. Walton	E. J. O'Connor	Trent Maritime Co., Ltd.
Dunedin Star	GKKT	7.9.51	J. Davies	G. Stanley, J. Davis, J. Edwards	R. B. Read	Blue Star Line, Ltd.
Dunera	GBBR	24.12.51	A. A. Kay	F. Hills, C. R. S. Monk, M. J. Hine, B. Davies	A. McCartney	British India Steam Nav. Co., Ltd.
Dunkery Beacon	GUFS	10.9.51	A. C. E. Green	A. Tatchell, J. Twite, D. Bervick	G. Delahoy	Phs. Van Ommeren (London), Ltd.
Durango	MAIM	18.8.51	H. Wright	J. Allason-Jones, B. Y. Harrison, J. Connell	H. Davies	Royal Mail Lines, Ltd.
Durban Castle	GPGP	11.3.52	R. A. D. Cambridge, D.S.C., R.D., R.N.R.	A. Backhouse, R. Beaumont, J. James	J. Eager	Union Castle Mail S.S. Co., Ltd.
Durham	GWWK	15.4.52	N. L. Warren	G. Keyse, J. Nocton, D. Hilliard, C. French	J. F. McNeil	Federal Steam Nav. Co., Ltd.
Edinburgh Castle	GOHN	24.4.52	T. W. McAllen	B. Oliver, K. J. Barry, G. E. Smith, D. A. Evans	J. Hodgson	Union Castle Mail S.S. Co., Ltd.
Egidia	GJZD	17.9.51	R. S. Paton	W. B. Sawyer, W. Hallum, R. Watt, R. M. Sinclair	I. J. C. Taylor	Anchor Line, Ltd.
El Gallo	MAIP	4.12.51	S. W. Watts	R. K. Hanrahan, W. P. Hanrahan, J. A. Hogg	H. R. Sullivan	C. T. Bowring & Co., Ltd.
Elysia	GJZK	10.3.52	D. Barclay	D. Ballantyne, H. Keenan, J. McLarty, G. McLean	W. Haire	Anchor Line, Ltd.
Empire Fowey	GMFW	9.1.52	C. E. Pollitt	G. E. Harris, P. Hewett, R. A. Game, M. Ellerington	P. Maloney	P. & O. Steam Navigation Co.
Empire Halladale	GPVQ	4.3.52	R. Blake	H. A. Cameron, G. Murdoch, R. E. Garisch, D. Miller	J. N. Cragg	Anchor Line, Ltd.
Empire Orwell	GRCB	9.1.52	N. W. Smith	E. W. Woodcock, J. Hughes, D. Hayes, J. R. English	A. C. Shippam	Orient Steam Nav. Co., Ltd.
Empire Patrai	GDKL	18.9.51	R. J. Young	S. O. Nazar, A. Honnor	C. J. Higginson	Fenton S.S. Co., Ltd.
Empire Pride	MAJB	30.8.51	G. Dobson, R.D., R.N.R.	R. Hammond, R. M. Bessant, J. Beckett	D. Alcock	Bibby Bros. & Co.
Empire Star	GCDP	20.2.52	F. N. Johnson, M.B.E.	G. Munro, R. Bayley, J. Maidment	A. Clark	Blue Star Line, Ltd.
Empire Viceroy	MAJN	6.4.51	J. B. S. Bland	A. M. Brockwell, C. D. Mason, J. W. Abbott	W. Clarke	Pandelis Shipping Co., Ltd.
Empress of Australia	GFSB	26.2.52	C. L. de Hauteville Bell, D.S.C., R.D., R.N.R.	H. Long, P. Litherland, D. Ewing	J. Mann	Canadian Pacific S.S., Ltd.
Empress of Canada	GSVR	27.3.52	J. P. Dobson, D.S.C., R.D., R.N.R.	I. S. Murray, W. C. Mackenzie, W. Scrimgeour	W. Clarke	Canadian Pacific S.S., Ltd.
Empress of France	GNTV	9.6.51	S. W. Keay	G. Makin, F. Grainger, L. E. McDowell	E. Murphy	Canadian Pacific S.S., Ltd.
Empress of Scotland	GMLV	15.4.52	C. E. Duggan, R.D., R.N.R.	J. Walker, J. W. Hooley, N. Pickering	W. Campbell	Canadian Pacific S.S., Ltd.
Erodona	GZLQ	19.3.52	J. A. Thompson	J. Mackie, K. Eastwood, R. W. Denmark	R. Pattinson	Anglo-Saxon Petroleum Co., Ltd.
Eros	GYSB	29.10.51	R. C. Vigurs	S. Lunn, C. P. Turquand, J. A. Mills	P. McEwan	Steamship Eros, Ltd.
Esperance Bay	GSMP	10.3.52	T. V. Roberts, R.D., R.N.R.	J. K. Wyles, G. S. Sheldon, I. S. McEwan, M. Robinson, G. H. Moss	H. H. Lyon	Shaw, Savill & Albion Co., Ltd.
Essex Trader	GCMS	21.3.52	D. G. Evans	D. A. Owen, E. Jones, E. Whislay	H. Tubbs	Trader Navigation Co., Ltd.
Esso Glasgow	GTXC	16.10.51	B. Bater	R. J. Allen, R. Prest, M. J. Alexander	D. Rae	Esso Transportation Co., Ltd.
Esso Plymouth	GYRX	8.12.51	E. Orr	A. Brown, J. Doyle, H. Johnson	D. O'Brien	Esso Transportation Co., Ltd.
Eucadia	GJZL	5.2.52	D. Morrison, O.B.E.	R. W. L. Crawford, C. Boyle, R. P. Jones, A. MacAdam	D. Sproat	Anchor Line, Ltd.

Explorer	GYJX	21.6.51	J. L. Curle	R. J. Abbott, W. Jackson, D. O. Lindsay	B. N. Walker	T. & J. Harrison
Fanad Head	GNQQ	25.9.51	H. N. Clarke	W. R. Nelson, J. R. Smith, R. W. Crawford	J. McClarthy	G. Heyn & Sons, Ltd.
Flamenco	GCBV	10.3.52	P. L. Hockey	W. J. Campbell, A. B. Powell, T. B. A. Wyness, —. Houghton	W. Foster	Pacific Steam Nav. Co.
Franconia	GBRQ	7.11.51	J. W. Caunce, R.D., R.N.R.	W. G. Smith, P. J. Mullan, R. D. Hardman	W. Blanchard	Cunard Steamship Co., Ltd.
Fresno City	GBYD	27.11.51	J. D. Lloyd	T. W. D. John, G. Groves, J. Pobiliard	D. B. Strang	Sir William Reardon Smith & Sons Ltd.
Geologist	GJMR	18.9.51	A. E. Jackson	W. Stoddart, G. O. Coleman, D. V. Jones	G. Blackburn	T. & J. Harrison
Georgic	GRLJ	20.2.51	C. S. Williams	K. Westerman, E. E. Willis, A. Leyland	G. Hill	Cunard Steamship Co., Ltd.
Glaucus	GDYZ	27.3.52	R. T. Horan, D.S.C., R.D., R.N.R.	J. Dawson, L. H. Pound, G. A. Smith	P. Hoare	A. Holt & Co.
Glenartney	GBLG	4.3.52	J. M. Anderson	V. Moore, P. Nicolson, G. King	J. F. Wilson	Glen Line, Ltd.
Glenorchy	GBLL	12.2.52	P. Cross	D. C. Doughty, K. Jones, P. Wilks	R. A. Knight	Glen Line, Ltd.
Gloucester	MANK	4.4.52	J. M. Taylor	A. W. Hibble, R. Hales, R. A. Martin	L. Sayers	Federal Steam Nav. Co., Ltd.
Golfito	GBYL	4.3.52	S. A. Sapsworth	R. Young, R. L. Leech, W. Littlewood, K. J. Leslie	R. W. Smith	Elders & Fyffes, Ltd.
Gothic	MAUQ	20.7.51	A. V. Richardson	H. Riding, A. Anderson, F. Packham, H. Harkness, J. Murchison	C. H. Roberts	Shaw, Savill & Albion Co., Ltd.
Gracia	MANN	22.11.51	J. McInnes	H. F. Tomson, R. Macauley, W. I. Stewart	W. Duguid	Donaldson Bros. & Black, Ltd.
Granford	MQGC	8.1.52	E. C. J. Morgan	A. MacDonald, J. Brown, J. Lord	R. Cox	Goulandris Bros., Ltd.
Haparangi	GJYX	19.2.52	R. G. Rees	C. E. Burrill, J. R. Ramsey, P. T. Slocum, J. Selwood	L. Rayner	New Zealand Shipping Co., Ltd.
Helicina	GKBC	17.1.51	J. B. Ritchie, O.B.E.	J. Morrison, B. L. Oliver, J. B. Walker	—. Flood	Anglo-Saxon Petroleum Co., Ltd.
Herdsman	GPZX	1.11.50	W. A. Short	H. Lawton, H. Jones, C. Arden	P. Moss	T. & J. Harrison
Herefordshire	GOFG	31.1.52	H. Kerbyson	B. Pennington, T. G. Hughes, A. P. Moore Ashcroft	A. G. Johnson	Bibby Bros. & Co.
Hertford	GKNW		H. N. Lawson	M. J. Blake, A. B. Stalker	P. Roberts	Federal Steam Nav. Co., Ltd.
Highland Brigade	GJKN	6.7.51	A. N. Anderson	F. M. Dickenson, R. F. Dalgleish, J. Lenfesty	J. Desborough	Royal Mail Lines, Ltd.
Highland Chieftain	GCTY	28.12.51	W. H. Grimshaw, O.B.E.	R. M. Box, M. Benett, C. Markham	W. Rollason	Royal Mail Lines, Ltd.
Highland Monarch	GMZF	16.9.50	H. G. Whittle, O.B.E.	E. Card, K. Kistler, J. Rutter, J. R. Manley	F. Dunk	Royal Mail Lines, Ltd.
Highland Princess	GFMN	7.2.52	W. H. Roberts	J. Upton, W. B. Baxter, R. B. Dales	F. Goodall	Royal Mail Lines, Ltd.
Hildebrand	GKTK		J. Whayman, D.S.C., R.D., R.N.R.	A. Niblock, H. Nish, H. Thomas	—. Tynan	Booth Steamship Co., Ltd.
Himalaya	MCDY	17.12.51	E. R. Bodley, D.S.O.	C. I. H. Greaves, J. P. Crichton, W. G. Constantine	F. E. Ash	P. & O. Steam Nav. Co.
Hinakura	GDVS	16.1.51	E. A. Burton	J. Algar	J. Devlin	New Zealand Shipping Co., Ltd.
Hororata	MANZ	16.10.51	E. H. Hopkins	F. Taylor, P. Davison, E. Cooper, D. Newman	D. E. Hodding	New Zealand Shipping Co., Ltd.
Huntingdon	GFCT	16.4.52	P. S. Calcutt	K. J. Field, A. Rollinson, P. Oppen	A. Wallace	Federal Steam Nav. Co., Ltd.
Hurunui	GJZF	30.10.51	H. E. Reilly, D.S.C., R.D., R.N.R.	S. Oates, E. T. Rowland, J. B. Camping	C. Braithwaite	New Zealand Shipping Co., Ltd.
Hyrcania	MADE	9.4.52	J. M. Robertson	J. Gibby, D. G. Mason, J. Knox	P. Reynolds	Baltic Trading Co., Ltd.
Imperial Star	GIAC	7.11.51	G. C. Goudie	G. A. Hunt, M. T. Slessor, J. Nolan	W. H. Jones	Blue Star Line, Ltd.
Inishowen Head	MAOC	27.3.52	W. J. Leinster	W. Greig, F. James, R. A. Maxwell	A. E. Adams	G. Heyn & Sons, Ltd.
Interpreter	GPZY		H. Coates	C. Arden, I. Mitchell, G. Harvey	N. Ward	T. & J. Harrison
Inverbank	GKML	15.12.51	L. W. Thorne	J. A. Niblock, H. M. Stephens	P. C. Kelly	Andrew Weir & Co., Ltd.
Jamaica Producer	VPLM	14.9.51	G. E. M. Jenkins	J. A. Whitehouse, C. P. Graty, T. A. Kidd	E. Brown	Kaye Son & Co., Ltd.
Jersey City	GIGA	24.7.51	D. W. Boutcher	D. B. Thomas, J. Vaughan, T. Turner	H. Christeanson	Sir William Reardon Smith & Sons, Ltd.
Jessmore	MAOF	22.11.51	R. E. Holland	R. B. Douglas, A. Estill, P. H. Warne	J. Mathieson	Furness Withy & Co., Ltd.
John Biscoe	VPNE	1.8.51	W. Johnston	R. M. Kane, J. Park, A. de St. Jorre	W. Banner	Government of the Falkland Islands
John Holt	GNFD	15.1.52	F. Sherrington	W. R. Atkinson, A. D. Furrel, J. H. Sawyer, J. G. Jones, R. J. Griffiths	G. W. Burke	John Holt Line, Ltd.
Kaipara	GZPY	23.10.51	J. F. Wood	H. O. T. Fuller, J. Sey, M. Foster.	E. Carver	Trinder Anderson & Co.

Name of Vessel	Call Sign	Last Return Received	Captain	Observing Officers	Senior Radio Officer	Owners/Managers
Kaituna	GQGG	21.1.52	S. Clampitt	T. G. Wilson, J. Jackson, G. B. Charleson, P. Johnson	S. Woodward	Trinder Anderson & Co.
Kenilworth Castle	MQLP	22.11.51	T. H. Whatley	D. Arnold	P. W. Moore	Union Castle Mail S.S. Co., Ltd.
Kent	GPDC	25.10.51	T. A. S. Moncrieff	J. Collins, D. Moran, J. North	T. G. Terrell	Federal Steam Nav. Co., Ltd.
Kenuta	GCBW	23.4.52	J. D. Richards	P. A. A. James, D. Whelbourn, J. E. Evans, D.S.C., R.D., R.N.R.	C. A. De Vine	Pacific Steam Nav. Co.
King Robert	MAON	12.12.51	G. Craze	G. Dando, P. W. Kidd, A. D. Terras	C. Cowen	King Line, Ltd.
King William	GNVF	7.11.51	A. B. Drever	J. C. Davies, T. Fairclough, J. F. Campbell	R. Pester	King Line, Ltd.
Kingston Onyx	MLFP		A. R. Cornish			Kingston Steam Trawling Co., Ltd.
Kohistan	GSFZ	21.4.52	A. N. Henderson	C. O. Jones, P. Cresswell, J. T. Verrill	D. Daly	F. C. Strick & Co., Ltd.
Laguna	GJKC	4.3.52	P. H. Ray	D. J. McManus	S. Morris	Pacific Steam Nav. Co.
Lanarkshire	GCTC	7.9.51	A. R. Cossar	A. D. Rumble, G. H. Marshall, R. Davies	G. J. Ingram	Turnbull Martin & Co., Ltd.
Lancashire	GLZC	8.4.52	N. F. Fitch	W. O. Thomas, R. Hagley, A. W. French, N. J. Gates	A. Jones	Bibby Bros. & Co.
Lassel	GFND	11.2.52	A. Penrice	J. M. Edgar, R. E. Keers, A. Corlett	B. Thompson	Lamport & Holt Line, Ltd.
Latia	GLCF	10.9.51	A. E. Bleasdale	W. Jones, —. Adlam, W. Clark	D. McKee	Anglo-Saxon Petroleum Co., Ltd.
Laurentia	GNDY	12.12.51	A. Bankier	N. Forth, A. McCallum, R. Durling, J. A. Douglas	A. W. J. Levack	Donaldson Bros. & Black, Ltd.
Levernbank	GLPZ	16.4.52	T. S. Robertson	F. G. Howard, A. Dorkins	J. Simpson	Andrew Weir & Co., Ltd.
Linguist	GQBC	10.8.51	W. Weatherall	C. H. Boam, A. Hancock, D. R. Carden	W. Bennett	T. & J. Harrison
Livorno	GPWF	17.11.51	G. Mussared	B. Nicolle, I. Metham, R. Lomax	J. W. McPartin	Ellerman Wilson Line, Ltd.
Lloydcrest	MAOY	25.6.51	L. Barwell	R. Thompson, S. J. Gawlik, M. Munce	F. Thornborough	Crest Shipping Co., Ltd.
Lobos	GDXL	28.11.50	A. G. Litherland	H. Walmsley, J. Williamson, K. Eastwood	E. Rogers	Pacific Steam Nav. Co.
Loch Avon	GMZT	17.3.52	C. E. Mason	J. J. Rutter, G. Gulson, L. Hunter	M. Littlejohn	Royal Mail Lines, Ltd.
Loch Garth	GMZY	18.4.52	J. Smith, R.D., Cdr., R.N.R.	G. Dudley, J. Collins, G. Wolstenholme	D. J. W. Morgan	Royal Mail Lines, Ltd.
Loch Ryan	MAOZ	3.12.51	R. N. Fletcher	A. N. Brook, A. Forbes, D. Hargreaves	W. Clarke	Royal Mail Lines, Ltd.
Lord Gladstone	MAPA	1.11.51	C. L. Brien	C. A. Brown, H. Grayson, A. H. Benson, M. Warrick	A. G. Pews	Ships Finance & Management Co., Ltd.
Losada	GDXM	21.4.52	R. G. Skellorn	W. Jenkins, R. Luck, T. R. Phillips	M. O'Riordon	Pacific Steam Nav. Co.
Macharda	GKKF	1.6.51	R. A. Penston	I. A. MacLaren, H. S. Prestwood, L. J. Saxty	J. Caddy	T. & J. Brocklebank, Ltd.
Magdapur	GBJX	24.12.51	A. Hill, O.B.E.	P. A. Gunson, —. Guthrie, D. Wild	B. J. Smith	T. & J. Brocklebank, Ltd.
Mahanada	GOFM	3.5.51	C. W. C. Parry	P. Brand, L. Des Landes, P. Briscoe	T. Williams	T. & J. Brocklebank, Ltd.
Mahia	GNZV	6.3.52	G. Heywood	R. Munroe, G. Foster, J. Dalby	G. Evans	Shaw, Savill & Albion Co., Ltd.
Mahout	GDZN	29.3.52	H. F. Scoins	C. S. Macadie, J. Lyle, H. Evans	K. G. Fawcett	T. & J. Brocklebank, Ltd.
Mahseer	GZSV	15.12.51	L. T. Owen, O.B.E.	M. Taylor, S. Turner, D. Robbins	R. Burton	T. & J. Brocklebank, Ltd.
Mahsud	GSCP	27.4.51	L. F. Dodson	J. Kirkgam, B. Dey, G. F. Key	B. J. Guy	T. & J. Brocklebank, Ltd.
Maihar	GSCL	13.4.50	W. Gibson	W. G. McFarland, O. Pritchard, L. Fletcher	F. C. Bailey	T. & J. Brocklebank, Ltd.
Makalla	GOFN	5.2.52	T. Eddy	R. E. Roberts, M. Embleton, H. L. Burn	—. Goodson	T. & J. Brocklebank, Ltd.
Malancha	GZRD	3.11.51	S. Broughton	J. K. Cooper, D. Bonney, P. Pembridge	A. Goodwin	T. & J. Brocklebank, Ltd.
Malmesbury	MAQE	25.3.52	S. W. Howell	P. Kirby, J. Hands, C. W. Trowbridge	C. Barry	Houlder Bros. & Co., Ltd.
Maloja	GFBD	7.1.52	R. G. Freeman	R. L. Pigeon, W. C. Rimmer, W. A. Rea, W. H. Bickeford	W. Dawson	P. & O. Steam Navigation Co.
Manchester City	GBBP	15.12.51	W. Oliver	A. W. Swan, A. Cookson, T. Hancock	M. Doran	Manchester Liners, Ltd.
Manchester Division	GBYR	7.5.51	W. Hine, R.D., Cdr., R.N.R.	N. W. Cockshoot, L. C. Taylor, G. A. Cowell	T. Berry	Manchester Liners, Ltd.
Manchester Merchant	MGZQ	8.4.52	E. W. Raper	D. S. Mullard, R. Wadsworth, T. Hancock	A. Broadbent	Manchester Liners, Ltd.
Manchester Port	GYNF	10.1.50	M. E. Bewley	R. Webster, J. McCarron, A. G. Rowlands	P. MacNab	Manchester Liners, Ltd.
Manchester Progress	GPGD	15.12.51	H. Hancock	J. Illingworth, J. Sullivan, J. E. Askew	W. Critchley	Manchester Liners, Ltd.

Manchester Regiment	GBRD	19.10.49	E. W. Espley	G. R. Thompson, G. S. Garner, J. Parish	J. Reid	Manchester Liners, Ltd.
Manchester Shipper	MAPC	22.1.52	W. H. Downing	R. O. White, F. Lewis, J. Illingworth	E. Ambler, D.S.C.	Manchester Liners, Ltd.
Manchester Trader	GMWG	15.12.51	W. H. Downing	—. Bowen, W. E. Quirk, J. L. McCarthney	F. J. Fitzgerald	Manchester Liners, Ltd.
Mandasor	GBNY	28.12.51	R. Humble	C. Grey, G. W. Sinclair, P. Manson	A. Rea	T. & J. Brocklebank, Ltd.
Mantola	GDMY		R. Stone			British India Steam Nav. Co., Ltd.
Marengo	GLFW	13.4.51	F. Ellison	J. Johnson, C. O. H. Edwards, J. Spandler	G. Camm	Ellerman's Wilson Line, Ltd.
Margay	GFYQ	15.12.51	E. A. Prentice	M. W. Tipple, B. S. Kenn, J. Jones	E. Leigh	Kaye, Son & Co., Ltd.
Markhor	GTFZ	10.4.52	J. B. Newman	T. J. Hamilton	G. Stone	T. & J. Brocklebank, Ltd.
Marsdale	GBKB	18.10.50	M. Ferguson	C. Webster, J. Bennett, D. Hamilton	D. Chuster	Kaye Son & Co., Ltd.
Martand	GTGG	17.3.52	T. Fox-Lloyd	J. M. Coles, F. Watkins, J. Robertson	D. H. Butterworth	T. & J. Brocklebank, Ltd.
Martita	GNQT	10.3.52	H. Bunn	L. Manser, T. McDonald	G. W. Morris	Kaye Son & Co., Ltd.
Mataroa	GCSV	7.2.52	R. G. James, R.D., Capt., R.N.R.	B. E. Kettle, P. Lawrence, F. Attwood, V. H. Vizer	L. Boyce	Shaw, Savill & Albion Co., Ltd.
Matheran	GOFQ	19.2.52	H. G. Allen, M.B.E.	P. D. Griffiths, C. P. Margeson, H. Sompson	G. W. Hazel	T. & J. Brocklebank, Ltd.
Matina	GSZX	18.4.52	F. Inch	H. G. Cresswell, C. D. Abbott, J. Macarthie	D. Knight	Elders & Fyffes, Ltd.
Mauretania	GTTM	9.1.51	D. W. Sorrell	M. B. Cox, R. L. Joyner, L. Portet, G. R. Carter	F. Clarke	Cunard Steamship Co., Ltd.
Media	GSWR	21.1.52	G. H. Morris	J. S. Roe, G. W. Edwards, —. Des Landes	A. Hopkins	Cunard Steamship Co., Ltd.
Melbourne Star	GDFZ	4.3.52	F. N. Riley, D.S.O.	D. A. R. James, I. C. Mackintosh, J. S. Collins, —. Hunt	J. D. Dunlop	Blue Star Line, Ltd.
Millais	MAPH	19.3.52	J. King	J. W. Chatfield, I. Owen, R. Brownbill	W. Mackay	Lamport & Holt Line, Ltd.
Mirror	GDFL	25.4.51	J. G. West	J. S. Deane, A. Miller	N. R. Iden	Cable & Wireless, Ltd.
Modasa	GFDZ	28.11.51	W. A. Busby	P. Sutton, W. Brown, F. G. Hall	P. Sargent	British India Steam Nav. Co., Ltd.
Monarch	GBDF	5.4.51	J. Betson	J. A. Hall, J. Pattison, M. Landes	T. Tilley	H.M. Postmaster General
Mooltan	GFBC	16.2.51	J. M. Peter	D. Aikman, L. H. Kellett, J. Jenkins	J. Ormiston	P. & O. Steam Navigation Co.
Moveria	GKYW	17.3.52	R. McNie	A. G. Ingram, C. Sheppard, —. MacAuly, I. Hood	S. Sheridan	Donaldson Bros. & Black, Ltd.
Mulbera	GFTM	29.10.51	E. G. Baines	P. Middleton, D. Perry	—. Phillips	British India Steam Nav. Co., Ltd.
Myrtlebank	GLQB	27.2.51	R. J. Owen	C. T. Lewis, A. Tavendale, A. Syimcyade	F. McGuiness	Andrew Weir & Co., Ltd.
Napier Star	MAPN	17.11.51	T. W. Fleming	E. Harvey, C. G. Sneaton, D. G. Mallinger	F. F. Burley	Blue Star Line, Ltd.
Naticina	GIGH	29.11.50	G. D. Maddrell	J. D. Dyson, A. Douglass, B. Bagler, J. Thompson, A. Batey	J. W. Starrs	Anglo-Saxon Petroleum Co., Ltd.
New Australia	GZKD	23.1.52	K. D. G. Fisher	J. F. Mason, J. Johnstone, B. Mahy, C. H. Saddington	W. Chick	Shaw, Savill & Albion Co., Ltd.
New York City	MATR	28.2.52	F. P. Neil	A. Wright, J. Hansen	T. Jenkins	Charles Hill and Sons, Ltd.
New Zealand Star	GYCR	4.10.51	E. N. Rhodes	A. V. Watt, A. E. Williams	A. B. Ewart	Blue Star Line, Ltd.
Newfoundland	GNMC	17.1.51	C. H. Kenyon	J. B. Stewart, J. T. Sheffield, C. A. Hollinshead	T. Cahill	Furness Withy & Co., Ltd.
Nordic	GDJC	25.9.51	E. J. Jones	P. Bentnawl, C. F. Partington, H. Williams	J. E. Whitworth	Prince Line, Ltd.
Norfolk	GJLV	25.9.51	B. Evans	H. J. Heron, A. P. Harrington, J. R. Witchell	J. D. Turnham	Federal Steam Nav. Co., Ltd.
Norwegian	GDMC	9.4.52	A. L. Hunter	D. J. Butterworth, J. Short, R. S. Hopkins	C. Carpenter	Donaldson Bros. & Black, Ltd.
Nottingham	GCNC	25.9.51	H. Hill	R. Burton, R. Hood		Federal Steam Nav. Co., Ltd.
Nova Scotia	GNNK	1.1.52	J. E. Wilson, O.B.E.	J. D. P. Williamson, J. Williams, D. Fuller	W. C. Brock	Furness Withy & Co., Ltd.
Novelist	GMLG	3.3.51	T. E. Steele	W. L. Ashton, I. G. Macaulay, J. C. Court	D. Berry	T. & J. Harrison
Orari	GJKX	15.4.52	J. Andrews	O. Springett, J. Milner, A. Masson, W. Martin	C. Robinson	New Zealand Shipping Co., Ltd.
Orcades	MABA	4.7.51	I. E. G. Goldsworthy, R.D., R.N.R.	C. B. Cole, B. Campbell, F. Fletcher, P. N. Byers, J. Gregson, R. J. Brittain, F. B. Woolley	F. W. Miller	Orient Steam Nav. Co., Ltd.
Orion	GYKL	31.1.52	N. A. Whinfield	P. P. Blois, J. R. English	T. H. Shannon	Orient Steam Nav. Co., Ltd.
Ormonde	GLYC	6.6.51	C. K. Blake, O.B.E.	R. D. Cookman, A. Bensley, A. J. Field		Orient Steam Nav. Co., Ltd.

Name of Vessel	Call Sign	Last Return Received	Captain	Observing Officers	Senior Radio Officer	Owners/Managers
Oronsay	GCNB	25.2.52	T. L. Shurrock, O.B.E.	G. K. Harrison, R. D. Cookman, J. Blois	D. Boon	Orient Steam Nav. Co., Ltd.
Orontes	GBXM	3.8.50	A. C. G. Hawker, C.B.E., R.D., R.N.R.	H. Riley, J. Birch, O. F. W. Pitts, A. T. Harris, K. P. Wilkinson		Orient Steam Nav. Co., Ltd.
Otranto	GFKV	2.4.52	S. S. Bernnand, O.B.E.	—. Pinkne, R.D., R.N.R., M. Champneys, J. Thornton, J. Terry, G. McGowan, —. Riddlesdale	C. Seaton	Orient Steam Nav. Co., Ltd.
Pacific Fortune	GBFM	4.3.52	F. H. Perry	G. W. Willoughsby, G. W. Whitby, A. C. Farrar-Hare	J. R. Thomas	Furness Withy & Co., Ltd.
Pacific Importer	GDKV	18.8.50	B. M. Collard	G. Cook, A. H. Linden, E. H. Gregson	W. Britton	Furness Withy & Co., Ltd.
Pacific Liberty	GDFQ	6.12.51	N. Robertson	A. H. Linden, A. R. Dyson, R. Clothier	E. Cunningham	Furness Withy & Co., Ltd.
Pacific Nomad	GCRZ	26.2.52	W. Hutchinson	J. Tye, E. H. Gregson, P. Cable	J. Dowdall	Furness Withy & Co., Ltd.
Pacific Reliance	GMJK		H. S. Reveley			Furness Withey & Co., Ltd.
Pacific Stronghold	GNSQ	26.2.52	A. H. Cooke	B. Gouldstone, P. Frodsham, K. Macalister, E. Hall	W. Thompson	Furness Withy & Co., Ltd.
Pacific Unity	GUAN	14.11.50	E. A. Kemp	A. A. Drake, J. Coyle, M. Kirk, J. P. Blenkinsop	H. M. Larritt	Furness Withy & Co., Ltd.
Palana	MMBF	6.3.50	F. R. Spurr	—. Savage, —. Trower, G. E. Harris	H. Olding	P. & O. Steam Navigation Co.
Pampas	GCDL	24.5.51	R. C. S. Woolley, R.D., R.N.R.	J. A. Martin, R. J. Turner	J. P. Deagan	Royal Mail Lines, Ltd.
Papanui	GDJW	6.2.52	T. Alderman, R.D., R.N.R.	J. C. Davidson, R. Loveridge, D. Blackman, G. Poole	W. Mate	New Zealand Shipping Co., Ltd.
Paparoa	GBCZ	24.3.52	N. A. Thomas	T. R. Walton, R. E. Donald, W. E. T. Dan, T. G. Fuller	L. Carter	New Zealand Shipping Co., Ltd.
Paraguay	MAQS	23.1.52	W. S. Thomas	N. J. Oliver, J. Frankison, N. Deighton	C. S. Gordon	Royal Mail Lines, Ltd.
Pardo	GMNZ	24.5.51	T. W. Stevens, R.D., Capt., R.N.R.	R. H. Greenall, R. J. Kistler, P. Sykes	M. Collins	Royal Mail Lines, Ltd.
Parima	GCLQ	3.8.51	G. S. Grant, R.D., R.N.R.	A. H. Whittle, J. C. Derby, J. Perkins	G. Cavaye	Royal Mail Lines, Ltd.
Paringa	MMBD	15.4.52	H. P. Mallet	M. Rooker, C. J. Morris, B. J. Stephens, W. Waghorn	G. Soanes	P. & O. Steam Navigation Co.
Parthia	GSWQ	4.9.51	J. W. Caunce, R.D., R.N.R.	—. Martin, R. Jones, D. T. Neck	A. Sullivan	Cunard Steamship Co., Ltd.
Perim	GCGB	1.1.51	R. J. F. Paice	T. B. Healey, D. A. Lower, J. E. Hancocks	F. Groves	P. & O. Steam Navigation Co.
Perthshire	GYWK	6.3.52	A. G. McPherson	M. P. R. Turner, K. Carter, R. R. Cawdrey	F. J. C. Bray	Turnbull Martin & Co., Ltd.
Philomel	GYPV	2.8.51	H. M. Selmer	A. H. Tobin, H. T. Lentin, J. Chapman, D. Diggens	R. M. Cathcart	General Steam Nav. Co., Ltd.
Philosopher	MAQV	9.1.52	T. Winstanley	T. W. Kent, J. Nash, R. A. Patmore	W. C. Doyle	T. & J. Harrison
Pilcomayo	GBZX	24.10.51	F. A. C. Thacker	L. W. Green, J. M. Ashworth, S. D. Phillippe	A. Oakes	Royal Mail Lines, Ltd.
Pipiriki	GDRQ	21.1.52	R. Dell	R. G. Blakey, C. Burrill, R. Burns	J. Treby	New Zealand Shipping Co., Ltd.
Planter	GZSS	23.2.49	H. T. Wells	G. W. Sigsworth, G. G. Robins	—. Gagney	T. & J. Harrison
Polar Maid	MAQX	10.11.51	J. W. Ross	D. A. Watt, W. Morrison, D. Smith	C. Houston	Chr. Salvesen & Co.
Port Adelaide	MGCG	31.12.51	C. R. Townshend	E. E. W. Dingle, J. A. W. Ashburner, L. G. Garnham, T. G. Clarke	O. Livermore	Port Line, Ltd.
Port Auckland	GWRB		J. G. Lewis, O.B.E.	G. Datson, K. W. Jayne, F. S. Mansel-Smith	J. S. Skinner	Port Line, Ltd.
Port Brisbane	GWRC	22.11.51	H. Steele, O.B.E.	A. A. Chilvers, J. Stannard, R. Long, A. Marriage	E. L. Arthur	Port Line, Ltd.
Port Chalmers	GWQR	10.10.51	P. H. Pedrick	M. E. Field, E. R. Jenkins, W. E. Bell	E. G. Gunner	Port Line, Ltd.
Port Hobart	GKGC	16.1.51	L. Copeland	D. G. Mason, H. J. Thompson, G. L. Danton	A. Brooke	Port Line, Ltd.

Port Jackson	GZKR	31.1.52	P. S. Ball	C. Milne, G. A. Ballinger, J. M. Jones, R. A. Finch	R. C. Crompton	Port Line, Ltd.
Port Lincoln	GFZK	17.3.52	G. G. Langford	D. J. Pritchard, A. J. Starkey, R. Barton	P. J. McKeon	Port Line, Ltd.
Port Macquarie	MAQY	4.4.51	L. W. Cady	J. Sharp, R. King, J. Hammond	R. Robertson	Port Line, Ltd.
Port Napier	GPKD	17.4.52	R. Bettess, D.S.C.	R. V. McKee, M. L. Coombs, W. Wakefield, D. Clarke	T. Hargrave	Port Line, Ltd.
Port Phillip	MAQZ	3.10.51	D. G. Bradley	T. G. Ward, A. W. Kensett, N. B. Hutton, E. Willis	B. McGovern	Port Line, Ltd.
Port Pirie	GLVQ	7.11.51	F. W. Bailey, M.B.E.	T. Fairbain, H. R. Long, C. Lancaster	J. Sharkey	Port Line, Ltd.
Port Townsville	MGCV	10.4.52	E. W. R. Young	P. E. Packward, N. B. Hutton, R. B. Jones	—. Jardine	Port Line, Ltd.
Port Vindex	MAUW	17.1.52	H. H. Smith, O.B.E.	D. N. Robinson, D. E. Bowden, J. R. King, G. Guest	F. M. Sharman	Port Line, Ltd.
Port Wellington	GDNJ	1.10.51	E. J. Syvret	C. J. H. Gorley, I. H. Stewart, I. M. Mackay, W. P. Russell	J. B. French	Port Line, Ltd.
Port Wyndham	GYCW	25.6.51	E. E. Roswell	C. M. Walkins, B. B. Skrimishire, J. F. Lester	J. N. Coutts	Port Line, Ltd.
Potaro	GNLJ	9.1.52	E. N. Giller, M.B.E.	G. Rogers, J. F. Anderson, E. D. Long	W. Devine	Royal Mail Lines, Ltd.
Powell	GKJL	8.4.52	D. Cornwell	R. Cardno, J. W. Stewart, M. T. Owen	J. Murphy	United Whalers, Ltd.
Pretoria Castle	GOAE	2.2.52	G. H. Mayhew	J. Bazill, E. Hull, J. Rae	J. Gill	Union Castle Mail S.S. Co., Ltd.
Radley	GZZG	2.5.50	C. J. Forster	H. G. Strickland, D. A. Burfoot, J. D. Todd	P. Probert	Stephens, Sutton, Ltd.
Rakaia	GFGW	27.3.52	C. J. Cordran, R.N.R.	C. S. Keay, F. Allen, A. Collins, R. E. Cooke	G. Saunders	New Zealand Shipping Co., Ltd.
Ramore Head	MAXX	15.12.51	E. W. Blacke	R. Crawford, D. Lawson, E. G. Davey	B. P. Lewis	G. Heyn & Sons, Ltd.
Ranchi	GLKW	28.8.51	C. E. Halliday	D. A. Lower	R. V. Gregory	P. & O. Steam Navigation Co.
Rangitane	GDBV	2.8.51	T. L. Maltby	J. Marshall, D. B. Gaskell, D. Crabtree	C. L. Lambe	New Zealand Shipping Co., Ltd.
Rangitata	GSZN	7.1.52	G. Kinnell, O.B.E.	A. Elliott, T. Wadie, J. Hannah	J. Grant	New Zealand Shipping Co., Ltd.
Rangitiki	GSXW	17.3.52	A. E. Lettington, O.B.E., D.F.C.	W. Dawes, D. Swyer, A. P. Harrington, J. Milner	J. Poyner	New Zealand Shipping Co., Ltd.
Rangitoto	GLMV	4.12.51	C. R. Pilcher, O.B.E.	A. F. Jenkins, R. E. Baker, R. P. Mather	G. A. Parker	New Zealand Shipping Co., Ltd.
Regent Hawk	GMND	19.3.52	G. H. Hobson	Z. Wojewodzki, L. Ziembicki, T. Hemingway	R. W. Jones	Regent Petroleum Tankship Co., Ltd.
Reina Del Pacifico	GMPS	15.12.51	J. Whitehouse	P. Whitaker, R. Lewis, E. Gowland	J. Butler	Pacific Steam Nav. Co.
Rhodesia Star	GUAX	2.2.52	G. L. Evans, O.B.E.	K. J. Colombo, A. Morrison, R. H. Jones	C. I. Roe	Blue Star Line, Ltd.
Rialto	GBLV	2.4.52	H. Goodman	F. Johnson, W. O. Cook, E. Seabrook	C. Child	Ellerman's Wilson Line, Ltd.
Richmond Castle	GCSP	4.3.52	J. P. Aplin	I. C. McPherson, T. P. Hebden, J. R. Brooks	W. A. Plater	Union Castle Mail S.S. Co., Ltd.
Rippingham Grange	GIGP	21.1.52	R. Owen	R. Brooks, J. H. Taylor, L. Zabel	A. C. Adkin	Houlder Bros. & Co., Ltd.
Rochester Castle	GZQF	10.3.52	H. L. Holland	F. J. Pigeon, C. Kelso, J. Cairns	T. St. J. Coleman	Union Castle Mail S.S. Co., Ltd.
Roslin Castle	GYJZ	25.7.50	J. M. Lycett, D.S.C.	J. C. Edwards, S. Hagan, H. Lawton	W. Burnett	Union Castle Mail S.S. Co., Ltd.
Rowallan Castle	GDFT	29.3.52	T. Allen	M. J. Norman, L. R. Steen, G. D. Attwood	H. Dunning	Union Castle Mail S.S. Co., Ltd.
Roxburgh Castle	GBGS	27.3.52	F. J. Pye, M.B.E.	G. W. John, —. Beadon, —. Oates	F. Broadhurst	Union Castle Mail S.S. Co., Ltd.
Royal Star	MARJ	26.1.52	G. Aldridge	F. C. H. Wood, B. G. Knight, M. R. Baxemberg, J. W. Poole	M. McCanlish	Blue Star Line, Ltd.
Ruahine	GKSY	2.2.52	A. I. Robertson, R.D., A.D.C., Capt., R.N.R.	J. Mason, E. Worster. O. Springett	J. Heath	New Zealand Shipping Co., Ltd.
Sacramento	GKCN	8.4.52	J. Robinson	E. Taylor, J. A. Etches, J. A. Pettinger	J. P. Carter	Ellerman's Wilson Line, Ltd.
Salacia	GZRN	17.11.51	J. Downie	G. B. Manson, B. Brown, W. McKean	W. Dockerty	Donaldson Bros. & Black, Ltd.
Salamanca	GLSG	9.1.52	A. Lyall	R. B. Bryant, J. Bruce, E. Swan	D. O. Callaghan	Pacific Steam Nav. Co.
Salaverry	GBLQ	7.11.51	A. G. Litherland	J. A. Greenwood, J. G. Galstone, J. B. Farrell	S. Parry	Pacific Steam Nav. Co.
Salinas	GLLK	29.5.51	T. J. Naylor	W. A. Washington, R. K. Thomas, R. T. Riley	E. Gill	Pacific Steam Nav. Co.
Salween	GFFN	31.3.52	S. S. Duncan	S. J. Jackson, J. Whitehead, J. Coogans, A. Smith	A. H. Brown	Henderson & Co.

Name of Vessel	Call Sign	Last Return Received	Captain	Observing Officers	Senior Radio Officer	Owners/Managers
Samanco	MARQ	2.4.52	J. Williams	G. Hunter, P. O'Driscoll, R. Pass	L. Cassidy	Pacific Steam Nav. Co.
Samaria	GJCF	26.2.52	A. MacKeller, R.D., R.N.R.	D. Calvert, B. Ellis, O. F. Elson	G. B. Bishop	Cunard Steamship Co., Ltd.
San Adolfo	GYKK	26.2.52	W. J. McLeod	T. J. Magee, D. P. Carroll, E. J. Stoddart	J. Forrester	Eagle Oil & Shipping Co., Ltd.
San Cirilo	GZMR	30.10.51	G. R. Pearson	N. Cocker, B. J. Hamilton, D. H. Fraser	F. Devlin	Eagle Oil & Shipping Co., Ltd.
San Felix	GFJZ	3.7.51	C. Summers	W. W. Gibb, K. D. Harrison, P. Hodges	D. J. Locke	Eagle Oil & Shipping Co., Ltd.
San Velino	GCNY	8.8.51	K. E. Spencer	W. Thompson, W. Povey, H. Bailey	J. Greene	Eagle Oil & Shipping Co., Ltd.
San Veronico	MASQ	11.2.52	W. Wigham	L. F. Lawrence, G. C. Turnbull, A. G. March	J. Crane	Eagle Oil & Shipping Co., Ltd.
San Vulfrano	MASR	21.1.51	M. A. Connell, M.B.E.	G. Munday, D. Shales, K. Spencer, T. Bowlerwell	J. Murdoch	Eagle Oil & Shipping Co., Ltd.
Sansu	GQQN		O. Owens, O.B.E.	W. Knight, A. G. Davies, M. Johnston, R. Martin	D. Graves	Elder Dempster Lines, Ltd.
Santander	GBNR	1.1.52	G. H. Rice	G. McC. Hunter, D. I. Jones, G. E. Mitchell	G. H. McClelland	Pacific Steam Nav. Co., Ltd.
Sarmiento	MARW	26.1.52	G. B. Wardale	F. Nuttall, E. Pepper, P. B. Potts	J. J. Hickey	Pacific Steam Nav. Co., Ltd.
Saxon Star	MARX	20.8.51	R. J. C. McDonald	J. King, R. Middleton, W. Davidson	R. Deakin	Blue Star Line, Ltd.
Scythia	GDYP	14.3.51	J. V. Locke, R.D., R.N.R.	P. S. Taylor, T. Grinrod, G. B. O. Bowyer	L. Varmin	Cunard Steamship Co., Ltd.
Selector	MARZ	18.4.52	L. Jones	R. A. J. Smith, G. Cain, F. Ford	C. Murphy	T. & J. Harrison
Settler	GTTX	4.3.52	R. F. Phillips	R. J. Turnbull, G. W. McGuinness, D. W. Johnson	M. O'Donnell	T. & J. Harrison
Sherborne	MFDS	5.1.52	G. R. Hancock	F. Gardner, W. Coombes, A. Hutchings	J. Boucaut	Galbraith, Pembroke & Co., Ltd.
Shielbank	GDPZ	11.2.52	W. Ford	N. Haliday, C. H. Drummond, B. E. Watson	W. C. Arscott	Andrew Weir & Co., Ltd.
Silverguava	GMVK	4.12.51	J. Duncan, O.B.E.	J. E. Sellars, D. Ashley, J. Bowman	W. O'Meara	Silver Line, Ltd.
Silveroak	GCQR	17.11.51	E. Palmer	I. Robertson, F. Hewett, G. Goddard, D. Walker	D. Stewart	Silver Line, Ltd.
Silversandal	GSFQ	16.4.52	A. N. Hurst	G. F. Lightfoot, D. Goddard, P. R. Miller	B. P. Killeen	Silver Line, Ltd.
Silverwalnut	GSFT	19.3.52	C. J. Metcalf	J. Meadows, M. Bingham, D. A. B. Walker	A. Wake	Silver Line, Ltd.
Sneaton	GDBS	8.11.51	W. Armstrong	E. Wilson, M. Turtland, W. Atkinson	J. Heslop	Headlam & Son
Socotra	MASC	27.7.51	J. C. W. Last, O.B.E., R.D., Cdr., R.N.R.	J. L. Dunkley, J. R. Turner, B. Tice, A. E. H. Dallas	H. F. Camp	P. & O. Steam Navigation Co.
Somerset	GJMN	8.4.52	H. R. N. Smith	C. A. Miller, P. R. Moultan, K. A. Murrey	D. Broome	Federal Steam Nav. Co., Ltd.
Southern Atlantic	GBLY	30.8.51	J. O. Bowie	A. D. Petrie, T. Storey	P. Curson	Chr. Salvesen & Co.
Southern Collins	MASE	13.6.51	J. Bowie			Chr. Salvesen & Co.
Southern Garden	MASF	23.4.51	W. J. Swanson	D. Scott, J. Flucker, K. T. Austin	G. R. Campbell	Chr. Salvesen & Co.
Southern Harvester	GFZJ	21.4.52	T. Strandskog	—. Anderson, —. Magnus, H. Solburg, D. Smith, G. Vaughan	A. Turnbull	Chr. Salvesen & Co.
Southern Opal	MASG	27.7.51	A. F. Baikie	I. Maclean, J. Maclean, C. Pole	J. Jonstone	Chr. Salvesen & Co.
Southern Raven	MAJG		J. McNaughton			Chr. Salvesen & Co.
Southern Venturer	GNNM	20.4.51	H. Myhre	J. Holtan, A. Haikness, K. Snekhestad	J. Hawick	Chr. Salvesen & Co.
Sovac	GDDV	4.12.51	M. W. Wilcox	W. Morton, C. S. Hagger, J. Scollay	W. Holbrook	Vacuum Oil Co., Ltd.
Speaker	GCGT	29.10.51	T. G. Holden	G. Cubbin, D. T. English, H. C. Crookshank	S. Ribee	T. & J. Harrison
Specialist	GCYF	29.10.51	D. Wolstenholme	G. B. Thomson	A. Watt	T. & J. Harrison
Springfjord	GQKQ	18.1.49	T. R. Mackle	J. Reid	A. Guy	Springwell Shipping Co., Ltd.
Stirling Castle	GYPX	3.12.51	G. H. Mayhew	M. Geeson, M. Long, J. Lewis, —. Booth	W. Brown	Union Castle Mail S.S. Co., Ltd.
Stirlingshire	GCQD	31.1.52	E. W. Jenkins	T. R. Halliday, D. M. Geddes, G. M. Silvers	N. J. Braddon	Turnbull Martin & Co., Ltd.
Strathaird	GRSX	31.1.52	H. S. Allan, R.D., Cmde., R.N.R.	J. Love, J. J. Shaw, C. Latham	—. Jardine	P. & O. Steam Navigation Co.

Stratheden	GDGT	9.4.52	G. C. Forrest, R.D., R.N.R.	A. C. Williams, N. R. Lewis, B. B. Jones, J. R. K. Neale	H. S. Horn	P. & O. Steam Navigation Co.
Strathmore	GYMS	1.3.51	C. E. Pollitt	I. M. Sinclair, J. P. McArthur, B. D. H. Thompson, M. D. Penny, J. P. Crighton, —. Blackburn	J. P. Carey	P. & O. Steam Navigation Co.
Strathnaver	GRPZ	25.4.51	J. C. Mellonie	D. T. Bolas, E. Aikman, D. Fanthorpe	A. Miller	P. & O. Steam Navigation Co.
Struan	MASJ	17.1.52	M. Ponson	D. Pollock, G. Reid, W. Murray	W. S. Hayes	Chr. Salvesen & Co.
Suffolk	GQQS	21.7.51	F. Pover	C. T. Rowlands	H. Hare	Federal Steam Nav. Co. ,Ltd.
Suncrest	GNWW	11.6.51	L. J. Hunter	S. Novakovic, N. Munce, —. Vernoeaux	—. Nicholson	Crest Shipping Co., Ltd.
Sunrover	MSLB		A. MacVicar	T. Horne, A. Nuttal, D. Cameron	H. Reynolds	Clunies Shipping Co., Ltd.
Sussex	MAEF	29.10.51	F. Lougheed	E. White, G. Naylor, D. Nicolson, A. W. Nibble, R. T. Youngman	E. Howarth	Federal Steam Nav. Co., Ltd.
Sutherland	GBYG	3.1.52	R. W. Nicolson	E. F. Smith, P. F. J. Woolett, J. Clark	M. McIver	B. J. Sutherland & Co., Ltd.
Sydney Star	MKSM	21.1.52	T. F. MacDonald, O.B.E.	G. C. Jones, C. P. Davy, D. L. Burt	D. Whitehead	Blue Star Line, Ltd.
Tamaroa	GFWX	24.3.52	G. P. McCraith	J. L. Carroll, W. Newport, J. Scott, A. Smyth, B. Irwin	D. MacCrae	Shaw, Savill & Albion Co., Ltd.
Tamele	GCBF	6.6.51	C. H. Sweeney	J. Sznage, T. F. James, T. Browne	A. Allen	Elder Dempster Lines, Ltd.
Tarkwa	MASU	8.8.51	G. D. Simpson	R. E. L. Hall, G. B. Roberts, J. F. Johnson	G. I. Gilling	Elder Dempster Lines, Ltd.
Tasmania Star	GKPC	14.1.52	G. Owen, O.B.E., R.D., R.N.R.	D. Gilmour, —. Kennedy	A. Beatt	Blue Star Line, Ltd.
Tasso	GLMR	4.9.51	J. R. Atkinson	J. Hodgson, L. Barnes, W. Walker	R. White	Ellerman's Wilson Line, Ltd.
Tectus	GBMJ	5.4.52	F. Leask	I. Higgins, J. S. L. Ayre, D. MacDonald	B. Constantine	Anglo-Saxon Petroleum Co., Ltd.
Tekoa	GJFQ	13.12.51	J. D. Bennett	J. Sutherland, W. F. Dan, G. Risley	T. O. M. Jones	New Zealand Shipping Co., Ltd.
Telemachus	GBLB	3.8.51	A. Harrison	R. T. Lloyd, C. V. Windsor, J. H. Walker, D. K. Dunlop	G. D. Wilson	A. Holt & Co.
Teviot	MASX	15.6.51	L. T. Peterson	V. Gordon, N. J. Oliver, R. Byles	D. A. Evans	Royal Mail Lines, Ltd.
Thamesfield	GDGK	30.1.52	J. Newbold	J. Turnbull, J. Blackie, B. W. Simpson	P. O'Callaghan	Hunting & Son, Ltd.
Theliconus	GBMT	9.1.52	W. R. Main	J. J. Preston, —. King, J. Markiewicz	P. J. Cottrill	Anglo-Saxon Petroleum Co., Ltd.
Timaru Star	GKKM		R. T. Hales	J. Calabrase, A. H. White, F. A. Ball, G. D. Miles	J. M. Mathias	Blue Star Line, Ltd.
Tinto	GBYT	13.4.51	S. H. Bennett, M.B.E.	S. C. Greenshields, E. W. Hirst, C. Everingham	G. Cleisner	Ellerman's Wilson Line, Ltd.
Torr Head	GZPW	17.11.51	M. Kennedy	R. Harris, T. A. F. Austin, J. Grieg	W. Kirwan	G. Heyn & Sons, Ltd.
Tregenna	GBPM	27.11.51	C. Lloyd Collinge, O.B.E.	P. T. Dennison, N. T. O. Berry, M. B. Bilsborrow	R. Gordon	Hain S.S. Co., Ltd.
Trelevan	GBPQ	15.12.51	S. K. Hawken	A. E. Maiden, J. Roberts, R. R. Welbury	C. J. Kelly	Hain S.S. Co., Ltd.
Trelyon	GBPP	25.9.51	F. J. Cornish, M.B.E.	J. Downard, H. Gravell, —. Tissiman	T. H. Murrin	Hain S.S. Co., Ltd.
Trevaylor	GCKG	17.11.51	I. Price	D. Fife, F. Coleman, J. R. Tissiman	A. Gillespie	Hain S.S. Co., Ltd.
Tribesman	GBNZ	28.12.50	W. Baker	D. Sims, S. Richardson	S. Pepper	T. & J. Harrison
Tribulus	GFJS	4.2.52	H. Sangster	J. McGhearie, P. Norman, A. Leggett	J. Gray	Anglo-Saxon Petroleum Co., Ltd.
Trochiscus	GFKB		J. A. J. Hamling, O.B.E.	J. A. Potts, A. Scott, C. G. Sadler		Anglo-Saxon Petroleum Co., Ltd.
Tweed	GBRP	24.1.52	C. C. Dingle	C. C. Cowley, P. J. Robinson, R. Foulkes	P. Guest	Royal Mail Lines, Ltd.
Twickenham	GNDC	27.9.51	W. Tully			Watts, Watts & Co., Ltd.
Umtali	GYWB	21.4.52	F. E. J. O'Hea	R. P. Bizzey, F. W. Bush, G. T. Gibson	S. Hewitt	Bullard, King & Co., Ltd.
Umtata	GDQF	13.11.51	D. L. Weston	J. Brocklesbury, J. Campbell, E. Bicknell	G. J. Claret	Bullard, King & Co., Ltd.
Umzinto	GIFQ	19.3.52	R. Harber	D. Breckon, G. Wood, E. T. Wolle	R. Bell	Bullard, King & Co., Ltd.
Vandalia	GCRQ	15.4.52	G. S. Evans	F. Pollitt, D. Johnston, D. Steff	W. Thompson	Cunard Steamship Co., Ltd.
Vardulia	GCFW	24.5.51	A. N. Sargent, O.B.E., R.D., R.N.R.	C. J. Burtinshaw, J. Clemenson, B. O'Brien	J. Murphy	Cunard Steamship Co., Ltd.
Vestra	MNNB	6.3.52	D. S. Archibald	H. M. Third, D. C. White	D. C. White	J. T. Salvesen & Co.
Volo	GPCJ	14.2.52	A. Morrell	A. T. Jardine, P. Moore, C. Wilson	G. Williams	Ellerman's Wilson Line, Ltd.
Waipawa	GWXQ	7.2.52	R. A. Milne	G. Main, J. Collins, B. H. Clarke-Lens, B. Tomalin	J. Hougheyn	Shaw, Savill & Albion Co., Ltd.
Wairangi	MATX	1.4.52	R. S. Mackenzie	A. O. Griffiths, P. H. Carden, I. McIntosh	N. V. Howell	Shaw, Savill & Albion Co., Ltd.
Waiwera	GBJB	5.2.52	L. J. Hopkins	A. Stevenson, R. Valvona, H. Tucker	J. Downie	Shaw, Savill & Albion Co., Ltd.
Walvis Bay	GKBZ	25.2.52	H. Gentles	J. N. Neck, T. Hastings, J. W. Curry	J. T. MacDonald	Sir R. Ropner & Co., Ltd.

Name of Vessel	Call Sign	Last Return Received	Captain	Observing Officers	Senior Radio Officer	Owners Managers
Wanstead	GFLS	12.1.52	D. G. Martin	F. O. Shorter, L. W. Crump, D. J. Young	A. H. Stewart	Watts, Watts & Co., Ltd.
Warkworth	MALF	8.11.51	N. Thompson	F. E. Wilson, G. B. Bell, D. Popplewell	S. Wardle	R. S. Dalgliesh, Ltd.
Warwick Castle	GRRJ	18.12.51	L. H. Farrow	I. J. Dawson, —. Hudson, N. Upham	G. Shaw	Union Castle Mail S.S. Co., Ltd.
Wendover	GFML	11.8.51	F. W. Grist	D. J. Cunningham, J. Baggot, D. Griffin	P. Wiggins	Watts, Watts & Co., Ltd.
Winchester Castle	GTPZ	10.3.52	G. W. B. Lloyd	J. B. Langley, J. R. Diggle, C. Bragg	R. Brew	Union Castle Mail S.S. Co., Ltd.
Woodford	GFMM	18.6.51	W. Shields, O.B.E.	M. Diggins, S. Kirby, —. Partridge	W. McKenzie	Watts, Watts & Co., Ltd.
Worcestershire	GFZM	11.2.52	F. C. Brooks	D. C. Monteith, A. M. Maclean, J. Morris	W. Fletcher	Bibby Bros. & Co.
Yoma	GLPN	17.1.52	S. Thompson	J. Thomson, J. Hamilton, H. Quigley	W. Allen	P. Henderson & Co.
Zealandic	MAGJ	17.3.52	P. F. Owens	J. S. Rutherford, D. Anderton, A. Adams, —. Roberts	A. MacLennan	Rio Cape Line, Ltd.
**Queen of Bermuda*	GZKF		L. F. Banyard, O.B.E.	N. E. James	H. Stennett	Furness, Withy & Co., Ltd.
Conway, H.M.S.	—	8.8.51	E. Hewitt, R.D., Capt. R.N.R.	The Senior Cadets	—	—
Pangbourne Nautical College	—	16.8.51	H. C. Skinner, O.B.E., Cdr. R.N.	The Senior Cadets	—	—
Worcester, H.M.S.	—	31.7.51	G. C. Steele, V.C., Cdr. R.N. (Retd.)	The Senior Cadets	—	—

* This ship has been recruited by the Bermuda Meteorological Service.

Supplementary Ships

Name of Vessel	Call Sign	Last Return Received	Captain	Observing Officers	Senior Radio Officer	Owners/Managers
Alkis	GSYV		J. Slater	G. Bloomfield, J. Dickie		S. G. Embiricos, Ltd.
Bellerby	MQJF	16.10.51	S. Richards	W. Grant, —. Darnborough, V. Easby	J. Isherwood	Ropner Shipping Co., Ltd.
Blairclova	GLLG		J. McVean	S. Judge, I. McGillivray, F. Doyle	E. Yard	Geo. Nisbet & Co.
British Duke	GBSW	16.8.51	—. McIver	L. R. White, —. Stock, —. Verdun		British Tanker Co., Ltd.
Cape Howe	GCYP	15.4.52	R. Reid	J. King, W. J. Clarke, M. Symon	—. Pope	Lyle Shipping Co., Ltd.
Circassia	GZMD		J. McC. Brown	D. McDiarmid, J. S. Watson, D. F. Storey, A. Hutcheon	J. McDonald	Anchor Line, Ltd.
City of Khios	GKYB		A. R. Horan	S. Hider, D. Cullen, B. Diggle	J. Saffney	Ellerman Lines, Ltd.
Clan Alpine	GIFF		G. Vernon-Greene	J. Wilkie, G. Berry, A. R. Irving		Cayzer Irvine & Co., Ltd.
Clan Lamont	GTTD		J. E. Townroe	R. R. Baxter, J. J. Grigor	R. R. Davies	Cayzer Irvine & Co., Ltd.
Clan Macbrayne	MAQA		W. H. Dalley	J. Freestone, J. L. Easton, J. C. Duncan	D. D. Munro	Cayzer Irvine & Co., Ltd.
Coptic	GSND	10.3.52	H. Thompson	P. Yeoman, J. Gunning, J. Yarwood, J. W. Wood	W. McGeer	Shaw, Savill & Albion Co., Ltd.

Dartmoor	GFQT		J. O. Roberts	W. G. Pattison, J. Howie, R. Jenkins	N. Abbott	Walter Runciman & Co., Ltd.
Devon City	MBKL		F. G. Dodman	J. H. J. Frost, J. R. Harris, B. M. Richards	G. H. Ronson	Sir William Reardon Smith & Son
Diomed	GCYR	19.12.51	R. Singleton	R. Dinnie, D. T. Maclauchlan, G. W. Povey	G. E. Naylor	A. Holt & Co.
Eastbank	GFKR	23.4.52	R. Smith	C. G. Watterson, H. Gunton, F. B. Rodgers	J. Carolan	Andrew Weir & Co., Ltd.
Eastern City	GBRB		W. V. Doughty	F. G. C. Marshall, A. H. Davies, R. Hardcastle	C. J. Easterling	Sir William Reardon Smith & Sons
Empire Medway	GSXV	8.1.52	H. A. Shaw	W. L. Rimmer, G. R. Grieve, W. G. Howard	T. Holden	Prince Line, Ltd.
Empire Trooper	GLXJ	14.1.52	R. H. A. Bond, O.B.E.	P. Pitcairn, P. A. Trace, P. A. Chubb	J. Reardon	British India Steam Nav. Co., Ltd.
Empire Windrush	GYSF	24.4.52	J. Wilson, O.B.E.	W. Cooper, P. Bower, G. McCarthie	F. Fowler	New Zealand Shipping Co., Ltd.
Folda	MLFR		E. Tullock			Chr. Salvesen & Co.
Forthbank	GJQX		D. A. Reid	P. Mitchell, G. W. Hargrieves, G. I. Williams	S. McWherton	Andrew Weir & Co., Ltd.
Greenland	GCLJ	28.11.50	C. F. McDonald	A. Millar, J. Thompson, J. Borthwick	D. W. Crearie	Currie Line, Ltd.
Harpalion	GFFX		G. Jones	J. T. Baker, S. D. Brown, R. Skinner	E. John	J. & C. Harrison & Co., Ltd.
Hendonhall	GBTX		C. H. Thomas	J. Perfect, J. B. Bewick		West Hartlepool Steam Nav. Co.
Hesione	GUGJ		M. J. Lewis	G. Robinson, J. McMaster, D. W. Thomas	M. Phelon	Houstron Line (London), Ltd.
Hollybank	MANY		A. J. Whiston			Andrew Weir & Co., Ltd.
Hudson Firth	GDKM	16.2.52	J. Gibbons	W. G. Lambert, M. R. Uminiski, J. E. H. Oliver	A. Dunckley	Hudson S.S. Co., Ltd.
Iceland	GFFT	4.10.51	R. Borthwick	J. K. Liston, F. G. Saunby, A. G. Marsh	R. Barrie	Currie Line, Ltd.
Leicestershire	GDBL		R. Cuming, D.S.C.	J. Butterworth		British India Steam Nav. Co., Ltd.
Lembulus	GKCQ		R. W. Robson	R. M. Graham, D. E. Booker, P. D. Hughes		Anglo-Saxon Petroleum Co., Ltd.
Llangibby Castle	GPLV	30.3.51	F. R. Pope, R.D., R.N.R.	D. J. Jones, R. Olden, J. Zugg	J. Eager	Union Castle Mail S.S. Co., Ltd.
Markab	GCVT	20.5.49	R. Chapman	A. Stuart, W. Russel	W. Brown	Phocean Ship Agency, Ltd.
Marna	MLPK	14.6.50	A. Goodlad	G. Wilson, G. Parker		Chr. Salvesen & Co.
Mulberry Hill	MAKQ		J. Campbell			Counties Ship Management Co., Ltd.
Northia	GDQK	11.3.52	J. R. Petrie	A. F. Bonniwell, P. V. Prideaux, D. E. Pitcher, A. Bennet	A. F. Bonniwell	Anglo-Saxon Petroleum Co., Ltd.
Port Alma	GSTN	26.2.52	D. F. Morgan	M. Rushan, E. Newstead, E. C. Hobday	F. Harrop	Port Line, Ltd.
Port Dunedin	GLCJ	14.1.52	E. Eastoe	—. Skimshire, C. Rhodes, J. Sellars	R. W. Baynes	Port Line, Ltd.
Port Fairy	GSTP		J. A. Fairbairn	M. L. Mitchell		Port Line, Ltd.
Port Victor	MSWK	15.4.52	E. T. N. Lawrey	R. J. Bostock, S. Pentith		Port Line, Ltd.
Rembrandt	GPFD		E. E. Roberts	C. H. Hayward, M. Siddle, J. Papsloe	C. G. MacCullum	Bolton Steam Shipping Co., Ltd.
Royal Emblem	GDSC		S. Moorhead	J. N. Meeks		Hall Bros.
Table Bay	MFTV		G. E. Miles			Lyle Shipping Co., Ltd.
Tarantia	GIGS		A. J. F. Colquhoun	J. C. Ross, A. C. Toms, W. McOnie	G. R. Thowburn	Anchor Line, Ltd.
Trelissick	GBPR		M. E. Sadler	J. Dalgliesh, D. R. Jenkins, D. J. Best	B. Cannell	Hain S.S. Co., Ltd.
Trevince	MATH		R. B. Oliver	J. A. Dixon, W. E. Thomas, J. W. Gillon		Hain S.S. Co., Ltd.
Treworlas	MATL	25.9.51	W. T. Evans	A. Millar, D. C. Penburthy, —. Foster		Hain S.S. Co., Ltd.
Tronda	MMLX	15.10.51	R. J. Sinclair	R. Angus, K. Chow		Chr. Salvesen & Co.
Woodland	MTCT		C. M. Webster	D. Mackenzie		Currie Line, Ltd.

Trawlers

The following is a list of trawlers voluntarily observing and reporting those elements of the weather which do not entail the use of any meteorological instruments.

Name of Trawler	Call Sign	Master	Owners/Managers
Boston Typhoon	MTDR	J. Betty	Boston Deep Sea Fishing Co.
New Prince	GBRN	M. Wright	Hewett Fishing Co., Ltd.
Red Crusader	GTBP	K. Hames	Iago Steam Trawler Co., Ltd.
Red Knight	MBQT	M. Wright	Iago Steam Trawler Co., Ltd.
Red Lancer	MKTP	J. Tomlinson	Iago Steam Trawler Co., Ltd.
Red Rose	MFMX	J. McKernon	Iago Steam Trawler Co., Ltd.
Robert Hewett	MDYS	G. Elliott	Hewett Fishing Co., Ltd.
St. Amani	GFVD	J. Dobson	J. Marr and Son, Ltd.
St. Britwin	MFXJ	J. H. Miller	T. Hamling and Co., Ltd.
St. Elstan	GDDL	G. Argumont	T. Hamling and Co., Ltd.
St. Nectan	GZJY	L. Abbey	T. Hamling and Co., Ltd.

LIGHT VESSELS

The following Light Vessels voluntarily observe and report from coastal waters of Great Britain.

Name of Vessel	Masters
Dowsing	J. R. Audley, S. R. Smith
East Goodwin	A. Giblin, F. M. England, W. S. Parish
Galloper	S. J. Vincent
Humber	F. I. Butcher, L. A. Brett
Newarp	T. J. Sales, W. J. Rogers
Royal Sovereign	W. J. Sheaf
Seven Stones	H. C. King, —. Appleby
Shambles	J. H. Cooper, W. C. Mouland
Shipwash	G. W. Broom, C. G. Isaac
Smith's Knoll	W. J. Hall, J. W. R. Reeve, B. Hadden

MARID SHIPS

The following is a list of ships voluntarily observing and reporting sea temperatures from coastal waters of Great Britain. Captains are requested to point out any errors or omissions in the list.

Name of Vessel	Call Sign	Captain	Owners/Managers
Actuality	GPPF	W. Conn	F. T. Everard & Sons, Ltd.
Amsterdam	MFBP	C. R. Baxter, D.S.C.	British Railways (Eastern Region)
Angelo	GQFY	S. N. Stokes	Ellerman's Wilson Line, Ltd.
Ariosto	GKPW	J. R. Stilwell	Ellerman's Wilson Line, Ltd.
Atlantic Coast	GWSY	P. A. Johnson	Coast Lines, Ltd.
Auk	MRCQ	C. T. Stone, O.B.E.	General Steam Nav. Co., Ltd.
Barra Head	MPQZ	W. Flett	A. F. Henry & MacGregor, Ltd.
Belhaven	MNXZ	P. L. Irvine	London & Edinburgh Shipping Co., Ltd.
Belravock	MKGV	T. Wallace	London & Edinburgh Shipping Co., Ltd.
Belvina	MLZF	W. Fisher	London & Edinburgh Shipping Co., Ltd.
British Scout	GJKD	W. G. Dunbar	British Tanker Co., Ltd.
Cambria	GBKT	J. Hughes	British Railways (L.M. Region)
Clupea	GOAJ	J. Jappy	Fishery Division, Scottish Home Department
Corfen	GDJX	E. Keene	Wm. Cory & Son, Ltd.
Corfleet	GWTD	A. G. Waller	Wm. Cory & Son, Ltd.
Corfoss	MAHX	K. G. Granger	Wm. Cory & Son, Ltd.
Cormain	MAHT	R. B. Armstrong	Wm. Cory & Son, Ltd.
Cormead	GDBX	T. Slack	Wm. Cory & Son, Ltd.
Cormist	GDVT	R. J. Barrow	Wm. Cory & Son, Ltd.
Cormoat	GLKV	J. U. Hansen	Wm. Cory & Son, Ltd.
Cormull	MAHS	E. R. W. Allen	Wm. Cory & Son, Ltd.
Corncrake	MJKL	K. W. Carmalt	General Steam Nav. Co., Ltd.
Crane	MMCS	K. Nicholls	General Steam Nav. Co., Ltd.
Drake	MMYC	R. B. Langley	General Steam Nav. Co., Ltd.
Duke of Argyll	GNVX	F. Ardern, D.S.C.	British Railways (L.M. Region)
Duke of Lancaster	GCPQ	E. B. Serjeant	British Railways (L.M. Region)
Duke of Rothesay	GNVL	J. Irwin	British Railways (L.M. Region)
Eildon	MLZL	J. Little	G. Gibson & Co., Ltd.
Empire Cedric	GRSC	W. N. Johnson	Frank Bustard & Sons, Ltd.
Empire Gaelic	MAVR	H. T. Green	Frank Bustard & Sons, Ltd.
Explorer	MRCZ	G. B. McLaren	Fishery Division, Scottish Home Department
Falcon	MNXL	S. W. Develin	General Steam Nav. Co., Ltd.
Fidra	MKQQ	T. Henry	Glen & Co., Ltd.
Golden Dawn	MLZV	Lieut. A. Adamson, M.B.E.	The Captain
Guernsey Coast	MANS	H. Keilit	British Channel Islands Shipping Co., Ltd.
Harrogate	MNDB	F. E. Lovern	Associated Humber Lines
Hibernia	MBMT	F. G. Manning	British Railways (L.M. Region)
Highwood	MLQQ	J. Coupland	E. R. Newbigin, Ltd.
Horsa	MPFJ	D. Dickson	Currie Line, Ltd.
Isle of Guernsey	GQYJ	F. E. Trout	British Railways (Southern Region)
Isle of Jersey	GRBQ	A. Light	British Railways (Southern Region)
Isle of Sark	GTSR	C. E. Durley	British Railways (Southern Region)
Jura	MARU	L. J. Blanche	Glen & Co., Ltd.
Kinnaird Head	GCSQ	J. Grant	A. F. Henry & MacGregor, Ltd.
Marine Craft Unit (R.A.F.)		Flt.-Lt. D. A. Koster	No. 1102 Marine Craft Unit
Melrose	MCFD	G. Simpson	Geo. Gibson & Co., Ltd.
Melrose Abbey	GSYW	J. Laverack	Associated Humber Lines
Mimma	GKPS	T. Mather	Scottish Fisheries, Scottish Home Office
Moray Coast	MKDL	P. N. Leask	Coast Lines, Ltd.
Narva	GQFP	R. J. McNinch	Glen & Co., Ltd.
Ocean Coast	GYMP	G. Mearns	Coast Lines, Ltd.
Petrel	MBGV	A. Pirch	General Steam Nav. Co., Ltd.
Plover	MLLV	A. Reid	General Steam Nav. Co., Ltd.
Rora Head	MKVB	A. F. Ramsay	North of Scot. & Orkney & Shetland S.N. Co. Ltd.
Runa	GFSW	J. Gilfillan	Glen & Co., Ltd.
St. Abbs Head	GODU	P. Stickle	A. F. Henry & MacGregor & Co., Ltd.
St. Clair	MMFX	T. Gifford	North of Scot. & Orkney & Shetland S.N. Co., Ltd.
St. Clement	GRGM	W. T. Ramsay	North of Scot. & Orkney & Shetland S.N. Co., Ltd.
St. Helier	GLBT	R. Pitman, D.S.C.	Divisional Marine Manager
St. Julien	GLBV	L. J. Richardson	Divisional Marine Manager
St. Magnus	GFYK	W. G. Stout	North of Scot. & Orkney & Shetland S.N. Co., Ltd.
St. Ninian	GJBB	A. M. Dundas	North of Scot. & Orkney & Shetland S.N. Co., Ltd.
Seamew	GBWY	E. C. Painter, D.S.C.	General Steam Nav. Co., Ltd.
Selby	MLFT	J. Collier, R.D., R.N.R.	Associated Humber Lines
Slieve Bawn	MQCC	W. N. Greenwood	British Railways (L.M. Region)
Slieve Bernagh	MLNL	J. B. Williams	British Railways (L.M. Region)
Slieve Bloom	MQDD	R. E. Sherwood, D.S.O.	British Railways (L.M. Region)
Slieve Donard	MQCQ	A. C. Borthwick	British Railways (L.M. Region)
Slieve League	MQCM	E. A. Horspool	British Railways (L.M. Region)
Slieve More	MQBM	C. A. Winckle	British Railways (L.M. Region)
Southern Coast	MASD	G. Goldman	Coast Lines, Ltd.
Thelma	MBKK	F. Fairweather	Glen & Co., Ltd.
Truro	GJJQ	H. Dunkley	Ellerman's Wilson Line, Ltd.
Vanellus	GDVW	J. E. Green	British & Continental S.S. Co., Ltd.
Vienna	GTBR	A. Pearson Sutton	British Railways (Eastern Region)

FLEET LIST (Australia)

VOLUNTARY OBSERVING SHIPS

The following is a list of observing ships voluntarily co-operating with the Meteorological Service of Australia

Name of Vessel	Captain	Observing Officers	Senior Radio Officer	Owners/Agents
Selected Ships:				
Canara	W. Bird, O.B.E.	T. Woodward, J. D. Campbell, C. C. Springall	P. A. Stuart	British India Steam Nav. Co.
Chupra	J. D. Woods	C. Allerton, H. S. Strawbridge, W. L. Hillcoat	R. C. Whiting	British India Steam Nav. Co.
Idomeneus	J. L. Johnston	W. A. Clark, G. D. F. Cruickshank, P. S. Lombard, G. Moncks	A. N. Williams	A. Holt & Co.
Koolinda	J. S. Airey	J. Paulsen, J. Palfreyman, R. Seaward	H. White	Western Australian State Steamships
Koomilya	F. W. Roberts	C. Stewart, R. Sicklin, G. Steinbeck	F. Mackie	McIlwraith, McEacharn, Ltd.
Kooringa	F. McLean	A. D. Hanson, V. Bovell, J. A. Grey		McIlwraith, McEacharn, Ltd.
Lowana	L. Fry	C. A. Blow, T. H. Millidge, J. K. Saint	R. M. Rees	Melbourne Steamship Co., Ltd.
Nellore	T. Mills	A. Johnston, G. Champion, G. Cleveland, K. Skinner	J. Bell	Eastern & Australian S.S. Co., Ltd.
Orestes	F. J. Cockburn	A. Surtees, G. Kitching, R. Denning, P. Beckett	J. Dennison	A. Holt & Co.
River Burnett	L. G. Ramsay	R. Campbell, H. W. Robinson, T. Beckinsale	F. E. Audsley	Australian Shipping Board
River Clarence	W. W. Fish	A. T. Lake, I. K. S. Adam, S. F. Dockwell	G. Harper	Australian Shipping Board
River Mitta	A. Knight	G. Davies, K. Clarence, W. Wiggins	M. Pearson	Australian Shipping Board
Triadic	A. Rhoades	J. P. Milton, W. L. Harboard, W. B. Jeavons	M. Hayter	British Phosphate Commission
Trienza	P. Richardson	D. Neilson, D. Robb, K. Oliver	J. Ward	British Phosphate Commission
Triona	C. L. Evans	P. W. Thompson, S. E. B. Harris, B. J. Robertson	R. G. Neale	British Phosphate Commission
Wanganella	—	—	—	Huddart, Parker, Ltd.
Supplementary Ships				
Diomed	A. M. Caird	H. A. Jeffrey, K. W. Dunlop, E. Webb	C. Palmer	A. Holt & Co.
Derrigo				Australian Shipping Board
Kybra				Western Australian State Steamships

FLEET LIST (Canada)
VOLUNTARY OBSERVING SHIPS

The following is a list of observing ships voluntarily co-operating with the Meteorological Service of Canada.

Name of Vessel	Owners
Selected Ships	
Aorangi	Canadian Australasian Line.
Canadian Challenger	" Canadian Challenger ", Ltd. (Canadian National Steamships).
Canadian Constructor	" Canadian Constructor ", Ltd. (Canadian National Steamships).
Canadian Cruiser	" Canadian Cruiser ", Ltd. (Canadian National Steamships).
Esso Knoxville	Imperial Oil, Ltd.
Fort Amherst	Furness, Withy & Co.
Fort Townshend	Furness, Withy & Co.
Imperial Alberta	Imperial Oil, Ltd.
Imperial Charlottetown	Imperial Oil, Ltd.
Imperial Fredericton	Imperial Oil, Ltd.
Imperial Quebec	Imperial Oil, Ltd.
Imperial Toronto	Imperial Oil, Ltd.
Imperial Winnipeg	Imperial Oil, Ltd.
John S. Pillsbury	Upper Lakes and St. Lawrence Transportation Co. Ltd.
Lady Nelson	" Lady Nelson ", Ltd. (Canadian National Steamships).
Lady Rodney	" Lady Rodney ", Ltd. (Canadian National Steamships).
Lake Manitou	Western Canada Steamship Co., Ltd.
Lake Minnewanka	Western Canada Steamship Co., Ltd.
Lake Pennask	Western Canada Steamship Co., Ltd.
Lake Sicamous	Western Canada Steamship Co., Ltd.
Lake Winnipeg	Western Canada Steamship Co., Ltd.
Lakemba	B. C. Ship Chartering Co., Ltd.
Ottawa Valley	Montreal, Australia, New Zealand Line, Ltd.
Pinnacles	Deep-Sea Tankers, Ltd.
Rupertsland	Hudson's Bay Co., Ltd.
Tantara	Johnson Walton Steamships, Ltd.
Waihemo	Canadian Union Line, Ltd.
Waikawa	Canadian Union Line, Ltd.
Wairuna	Canadian Union Line, Ltd.
Waitomo	Canadian Union Line, Ltd.
Lightships :	
Lurcher Lightship	Minister of Transport.
Sambro Lightship	Minister of Transport.

FLEET LIST (India)

The following is a list of observing ships, voluntarily co-operating with the India Meteorological Department

Name of Vessel	Owners
Selected Ships:	
Alavi	Mogul Line, Ltd.
Bahadur	Asiatic Steam Navigation Co., Ltd.
Bombay	Scindia Steam Navigation Co., Ltd.
Dara	British India Steam Navigation Co., Ltd.
Daressa	British India Steam Navigation Co., Ltd.
Dumra	British India Steam Navigation Co., Ltd.
Dwarka	British India Steam Navigation Co., Ltd.
Englestan	Scindia Steam Navigation Co., Ltd.
Havildar	Asiatic Steam Navigation Co., Ltd.
Islami	Mogul Line, Ltd.
Jalazad	Scindia Steam Navigation Co., Ltd.
Jaladuta	Scindia Steam Navigation Co., Ltd.
Jalaganga	Scindia Steam Navigation Co., Ltd.
Jalamani	Scindia Steam Navigation Co., Ltd.
Jalamanjari	Scindia Steam Navigation Co., Ltd.
Jalaprakash	Scindia Steam Navigation Co., Ltd.
Jalarashmi	Scindia Steam Navigation Co., Ltd.
Jalaveera	Scindia Steam Navigation Co., Ltd.
Jalayamuna	Scindia Steam Navigation Co., Ltd.
Jahangir	Mogul Line, Ltd.
Kampala	British India Steam Navigation Co., Ltd.
Karanja	British India Steam Navigation Co., Ltd.
Khosrou	Mogul Line, Ltd.
Maharaja	Asiatic Steam Navigation Co., Ltd.
Mahadevi	Asiatic Steam Navigation Co., Ltd.
Nadir	Asiatic Steam Navigation Co., Ltd.
Nurjehan	Asiatic Steam Navigation Co., Ltd.
Rajula	British India Steam Navigation Co., Ltd.

FLEET LIST (India)—*contd.*

Name of Vessel	Owners
Santhia	British India Steam Navigation Co., Ltd.
Shahjehan	Asiatic Steam Navigation Co., Ltd.
Singu	Burma Oil Co., Ltd.
Subadar	Asiatic Steam Navigation Co., Ltd.
Warla	British India Steam Navigation Co., Ltd.
Yenang Yaung	British Oil Co., Ltd.
Supplementary Ships:	
Akbar	Mogul Line, Ltd.
Badarpur	Burma Oil Co., Ltd.
Barala	British India Steam Navigation Co., Ltd.
Begum	Asiatic Steam Navigation Co., Ltd.
Bharatjal	BharatLine, Ltd.
Bharat Rani	BharatLine, Ltd.
Itaura	British India Steam Navigation Co., Ltd.
Jaladurga	Scindia Steam Navigation Co., Ltd.
Jalagopal	Scindia Steam Navigation Co., Ltd.
Jalajawahar	Scindia Steam Navigation Co., Ltd.
Jalakendra	Scindia Steam Navigation Co., Ltd.
Jalaketu	Scindia Steam Navigation Co., Ltd.
Jalakrishna	Scindia Steam Navigation Co., Ltd.
Jalamayur	Scindia Steam Navigation Co., Ltd.
Jalaratna	Scindia Steam Navigation Co., Ltd.
Jalavijaya	Scindia Steam Navigation Co., Ltd.
Malika	Asiatic Steam Navigation Co., Ltd.
Masimpur	Burma Oil Co., Ltd.
Nuram	Asiatic Steam Navigation Co., Ltd.
Risaldar	Asiatic Steam Navigation Co., Ltd.
Rizwani	Ltd.

FLEET LIST (New Zealand)
VOLUNTARY OBSERVING SHIPS

The following is a list of observing ships voluntarily co-operating with the Meteorological Service of New Zealand.

Name of Vessel	Owners
Selected Ships:	
Kauri	Union Steam Ship Company of New Zealand, Ltd.
Karitane	Union Steam Ship Company of New Zealand, Ltd.
Kaitoke	Union Steam Ship Company of New Zealand, Ltd.
Kawaroa	Union Steam Ship Company of New Zealand, Ltd.
Komata	Union Steam Ship Company of New Zealand, Ltd.
Kopua	Union Steam Ship Company of New Zealand, Ltd.
Koromiko	Union Steam Ship Company of New Zealand, Ltd.
Kurow	Union Steam Ship Company of New Zealand, Ltd.
Matua	Union Steam Ship Company of New Zealand, Ltd.
Maui Pomare	New Zealand Government.
Monowai	Union Steam Ship Company of New Zealand, Ltd.
Waimate	Union Steam Ship Company of New Zealand, Ltd.
Waipori	Union Steam Ship Company of New Zealand, Ltd.
Wairata	Union Steam Ship Company of New Zealand, Ltd.
Wairimu	Union Steam Ship Company of New Zealand, Ltd.
Waitaki	Union Steam Ship Company of New Zealand, Ltd.
Waitemata	Union Steam Ship Company of New Zealand, Ltd.
Supplementary Ships:	
Kaiapoi	Union Steam Ship Company of New Zealand, Ltd.
Kaimanawa	Union Steam Ship Company of New Zealand, Ltd.
Kaimiro	Union Steam Ship Company of New Zealand, Ltd.
Kaitangata	Union Steam Ship Company of New Zealand, Ltd.
Kaitawa	Union Steam Ship Company of New Zealand, Ltd.
Karepo	Union Steam Ship Company of New Zealand, Ltd.
Kartigi	Union Steam Ship Company of New Zealand, Ltd.
Katui	Union Steam Ship Company of New Zealand, Ltd.
Kawatiri	Union Steam Ship Company of New Zealand, Ltd.
Kiwitea	Union Steam Ship Company of New Zealand, Ltd.
Konui	Union Steam Ship Company of New Zealand, Ltd.
Korowai	Union Steam Ship Company of New Zealand, Ltd.
Piri	Imperial Chemical Industries, Ltd.
Port Waikato	Holm & Company, Ltd.
Viti	Tasman Steam Ship Company, Ltd.

FLEET LIST (Hong Kong)

VOLUNTARY OBSERVING SHIPS

The following is a list of observing ships voluntarily co-operating with the Royal Observatory, Hong Kong

Name of Ship	Captain	Observing Officers	Senior Radio Officer	Shipping Company or Operator
Anking	J. Taylor	S. Fergusson, J. F. O'Connor, J. R. Suffren	D. F. MacDonald	China Navigation Co., Ltd.
Anshun	F. N. Booth	A. J. Keddie, H. A. Ledeboer, R. P. Fountain	E. G. Inwood	China Navigation Co., Ltd.
Caroline Moller	W. J. Lang	A. L. Waites, G. W. Wiander, Yuan King Lau	F. Chan	Mollers' (Hong Kong), Ltd.
Chang Sha	C. P. Miller	V. R. Woolfe, A. W. K. Prosser, W. T. Masters, M. B. Fowkes	G. W. Bourne	China Navigation Co., Ltd.
Choy Sang	W. E. Reeve	E. M. Norman, J. Adair, James Taylor	R. M. Legg	Indo-China Steam Navigation Co., Ltd.
Chun Sang	D. G. R. Kinnear	J. G. Perrin, C. M. Wilson, W. G. White	E. West	Indo-China Steam Navigation Co., Ltd.
Eastern Glory	H. J. Cairns	J. E. Williams, R. H. McAlister, D. J. Hay, A. Nelson	C. D. Evans	Indo-China Steam Navigation Co., Ltd.
Eastern Queen	D. G. Burleigh	W. J. Bartlett, J. Krasucki, P. J. Sullivan	K. J. Bourke	Indo-China Steam Navigation Co., Ltd.
Eastern Saga	S. Schofield	G. Parish, A. N. Johnston, W. E. McLackland, M. J. Pope	L. W. Bell	Indo-China Steam Navigation Co., Ltd.
Eastern Trader	J. L. Baines	Tai Ai-Chun, Loh Yao Sing, Loo Shao Hsin	Simon Chang	Great Southern Steamship Co., Ltd.
E Sang	N. H. King	A. A. Watson, R. J. Cooper, T. Y. Yuan	W. I. Briggs	Indo-China Steam Navigation Co., Ltd.
Fengming	E. Bruce	S. J. Yeandle, A. L. Thomas, P. Bulatoff	R. M. Inwood	China Navigation Co., Ltd.
Fengtien	F. Gibbs	J. C. Anderson, R. A. Button, L. C. Wang	Leung Shu Fan	China Navigation Co., Ltd.
Foochow	J. W. Evans	F. W. Ridley, G. E. Blake, A. P. Sokoloff	Leung Tjeuk Shing	China Navigation Co., Ltd.
Fukien	A. H. Finnie	J. Hunter, R. Perry, S. N. Lai	Leung Man Hin	China Navigation Co., Ltd.
Funing	F. Hindle	M. D. B. Sweeny, D. L. Wilson, Y. C. Lee	G. Whitehead	China Navigation Co., Ltd.
Hailee	Johannes Hansen	K. Pedersen, G. Glasoy, K. Ness	Wuie lu Chan	China Siam Line
Haimeng	Walter Hannevig	Olaf Schibstad, A. Holmvik, P. Brandal	Chan Kam Tsun	China Siam Line
Hang Sang	J. E. G. Fotheringham	R. W. E. Little, D. N. Snashall, Hsieh Jao Chih	Lok Yung	Indo-China Steam Navigation Co., Ltd.
Hanyang	D. McG. Holmes	A. Harper, G Baxter, P. Y. Lam	Lo Kin Chek	China Navigation Co., Ltd.
Heinrich Jessen	R. A. D. Nielsen	C. S. Jensen, J. N. Holst, W. Kronenbitter	T. G. Oliver	Jebsen & Co., Ltd.
Hermelin	O. Osterberg	P. Karlsen, A. Skjorvestad, S. Sorvik	Lai Kwong	China Siam Line
Hermod	O. Apold	J. Eide, M. Sandbik, R. Gronvold	So Yuet Hang	China Siam Line
Hew Sang	R. G. G. Stanton	L. Ovslanikoff, M. T. G. Fish, K. C. Yeung	Ho Hung Ki	Indo-China Steam Navigation Co., Ltd.
Hin Sang	G. W. E. Edwards	J. H. Thomas, I. McInnes, M. de Verteuil	Ma Ping Leung	Indo-China Steam Navigation Co., Ltd.
Hiram	Sverre Jensen	Guy Sundholm, Hans Fredenborg, H. Kystvaag		China Siam Line
Hoi Houw	A. Fjeldhelm	K. Munkejord, O. Oftedal, O. Utseth	A. Takvam	Karsten Larssen & Co. (Hong Kong), Ltd.
Hoi Wong	A. Bjerkenes	B. Maeland, A. Vespestad, M. Madsen	O. Torresdal	Karsten Larssen & Co. (Hong Kong), Ltd.
Hunan	C. A. N. Baker	W. J. Coburn, D. S. Southey, J. H. M. Twibill	D. Fong Yan	China Navigation Co., Ltd.
Hupeh	R. E. Selwyn-Jones	L. Walker, W. N. Murray, L. Wai	Tsang Kau	China Navigation Co., Ltd.
Lok Sang	R. I. Groundwater	T. C. W. Marr, T. H. Nichols, Keng Jen Ko	J. E. Chew	Indo-China Steam Navigation Co., Ltd.
Mui Heng	M. S. Severinsen	H. Tvedt, H. Assheim, C. Asserson	H. Tvedt	Chin Seng Hong Shipping Co., Ltd.
Mui Hock	Einar Lind	Haakon Benneche, Leif Nilsen, O. Lavantonsen	Haakon Benneche	Chin Seng Hong Shipping Co., Ltd.
Pakhoi	G. T. M. Ramsay	G. S. Ireland, W. E. O'Connor, K. W. Wu	Leung Kan	China Navigation Co., Ltd.
Poyang	D. C. Sim	D. I. Robertson, A. Bartley, C. M. Li	Li San Kau	China Navigation Co., Ltd.
Produce	A. S. Bugge	W. Kobiesen, B. Nordhus	P. Worre	Karsten Larssen & Co. (Hong Kong), Ltd.
Sangola	R. E. Weatherseed	J. D. Sleigh, J. M. Woolock, J. R. D. McLeod	H. M. O'Garman	British India Steam Navigation Co., Ltd.
Shansi	W. E. Awcock	C. N. Stewart, D. S. M. Tosh, C. F. Chan	Wai Pun Un	China Navigation Co., Ltd.
Shengking	E. H. Histed	P. Flory, F. T. Quinn, S. K. Chen	T. W. Pomeroy	China Navigation Co., Ltd.
Shillong	G. A. Wild	M. H. D'Aeth, E. Snowden, J. F. Bannister	W. Matthews	British India Steam Navigation Co., Ltd.
Sinkiang	E. G. Thomas	A. V. Harrison, I. Robinson, S. T. Sung	Chin Fook On	China Navigation Co., Ltd.

Name of Ship	Captain	Observing Officers	Senior Radio Officer	Shipping Company or Operator
Sirdhana	R. J. Marshall	D. C. Murison, R. I. Higgins, A. E. Ford	A. E. Trencher	British India Steam Navigation Co., Ltd.
Soochow	C. P. Cope	D. W. R. Gash, A. O. Atkinson, J. C. Mark	R. R. Stevenson	China Navigation Co., Ltd.
Star Alcyone	G. V. A. Almstrom	K. G. Lindh, S. D. Bayliss, J. O. Blomberg	E. O. Lindahl	Everett Steamship Corporation
Szechuen	D. Needham	G. A. Abbs, J. Paton, S. H. Hsi	Chan Siu Ming	China Navigation Co., Ltd.
Taiyuan	Y. N. Campbell	A. Watson, D. A. Hutchinson, L. L. Watson	P. L. Littin	China Navigation Co., Ltd.
Tak Sang	W. T. Rochester	J. M. Marshall, G. J. Eastwood, K. Y. Feng	P. J. Behan	Indo-China Steam Navigation Co., Ltd.
Thai	O. I. Ihre	E. V. Lieberath, R. A. Ericksson, K. A. Albertsson	P. G. Nilsson	Everett Steamship Corporation
Wing Sang	H. G. Goddard	L. C. Cox, D. H. Mason, J. H. Gould	A. G. Lum	Indo-China Steam Navigation Co., Ltd.
Wo Sang	G. Owens	E. P. Ladbrooke, J. M. Taylor, D. D. Battell	J. Orman	Indo-China Steam Navigation Co., Ltd.
Yochow	J. W. E. Warrior	H. Philling, J. R. Brett, H. Nightingale	Cheung Shing Cheung	China Navigation Co., Ltd.
Yunnan	W. E. Hargrave	J. Storey, J. G. de C. Veale, I. F. Lee	J. S. Sahmet	China Navigation Co., Ltd.

FLEET LIST (South Africa)

The following is a revised list of observing ships voluntarily co-operating with the Weather Bureau of South Africa.

Name of Ship	Captain	Observing Officers	Radio Officer	Owners/Managers
Abraham Larsen	E. Christoffersen			Union Whaling Co., Durban.
Africana II	R. L. V. Shannon, O.B.E.	A. Thomas, D.S.C., L. Moon		Department of Fisheries, Cape Town
Agulhas	D. C. Wallwork	P. Sharp, P. Nankin, P. Birch	H. A. Pypers	Van Riebeeck Lines, Cape Town.
Aloe	S. S. Edwards	M. Williams, G. P. Brandt, P. Carrington	J. Klosser	Sarships, Durban
Basuto	E. Hale	A. Fawthrop		Thesen's S.S. Co., Cape Town
F. T. Bates	R. W. Watson	A. A. Ruckbie	C. S. Ehlers	S.A. Railways and Harbours, Cape Town
Benin	—. Webber	J. Smith, J. Holt, —. Makkink		Elder Dempster
Calabar	R. W. Philip	R. Rainir, R. Parker, D. J. C. Wright	B. D. Jackson	Elder Dempster
Constantia	F. D. Wilkinson	G. D. Duguid, W. Scott, R. Daniels	R. Briggs	S.A. Marine Corp., Cape Town
Dalia	E. N. Stewart	S. J. Hurst, S. J. Benjamin, S. H. Damp	J. Fluitman	Sarships, Durban
Gilia	J. Lundberg, M.B.E.			Irving and Johnson, Cape Town
Kaapland	P. F. M. Buchholtz	B. I. Algar, G. Casey, R. Caracandas	P. Goggin	South African Lines, Cape Town
Mashona	P. Bolam			Thesen's S.S. Co., Cape Town
Matabele Coast	O. C. Olsen	E. Steedman		Thesen's S.S. Co., Cape Town
Morgenster	D. Thorpe	A. F. Horden, G. W. Clancy, D. P. Powell	G. Adey	S.A. Marine Corp., Cape Town
Pequena	A. Soderland	M. T. Scott		Tristan Development Co., Cape Town
Roodewal			G. A. Chapman	Van Riebeeck Lines, Cape Town
Tristania	G. E. Hime	W. Allen, J. Pols	S. P. Garnett	Tristan Development Co., Cape Town
Vergelegen	F. Honeyman	R. Thompson, A. Pearson, D. A. Harris	A. Williams	S.A. Marine Corp., Cape Town
South African Nautical College *General Botha*	Captain G. V. Legassick, D.S.C., R.D., Capt. R.N.R.	The Senior Cadets		

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Meteorological Handbook for Pilots and Navigators. M.O. 448, 2nd edition, 1942, reprinted 1951. 3*s.* 6*d.* (3*s.* 8*d.*)

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